

*July* 1939

# TECHNOLOGY

## REVIEW

Title Reg. in U. S. Pat. Office



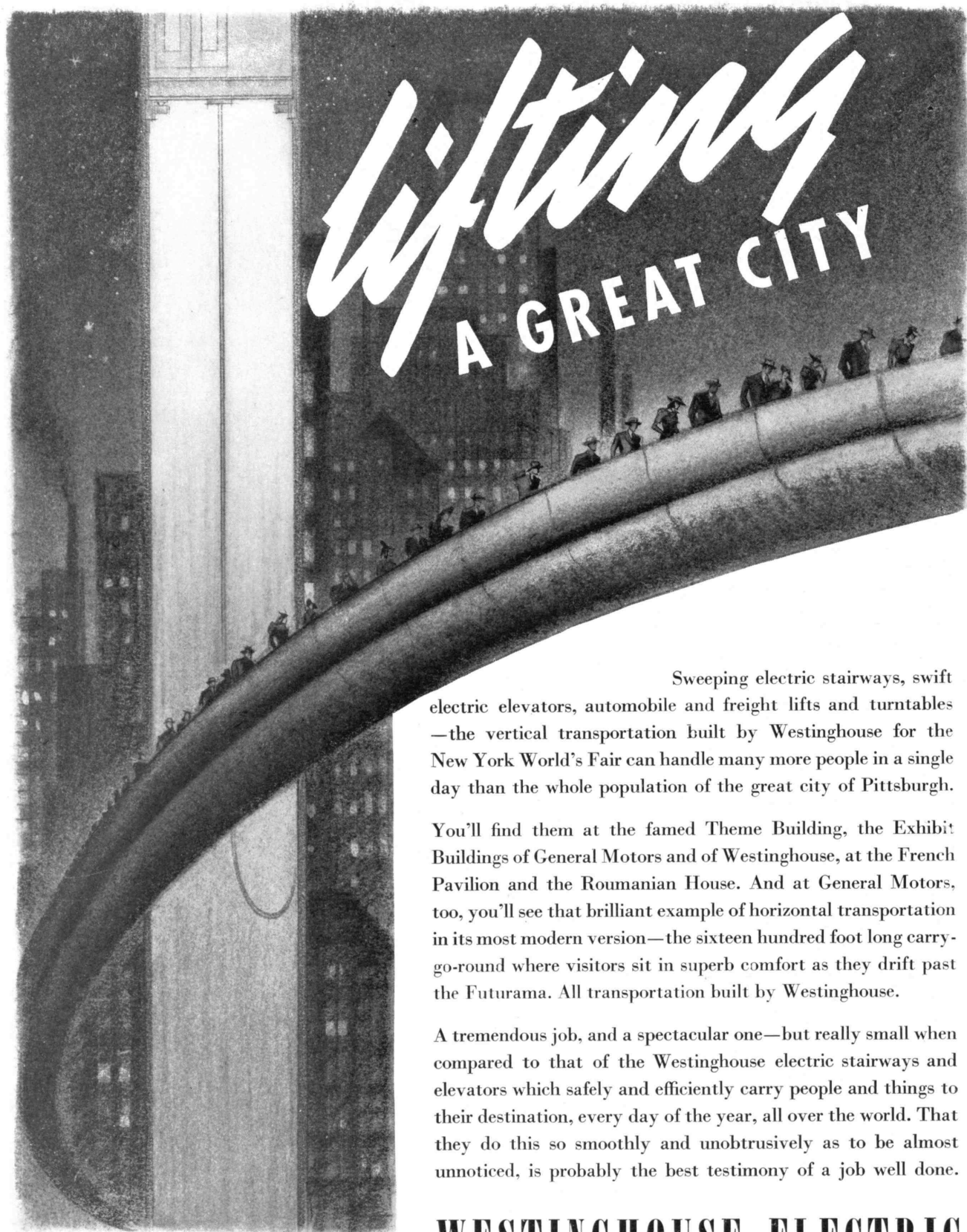


# technology review

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JERSEY CITY, N. J.



## THE TABULAR VIEW

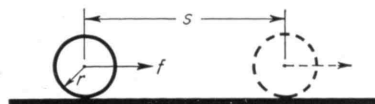
INCREASINGLY, the applications of science and technology create demand for direction and action by men of good will and men of free mind; few other characteristics of the practical culture engendered by the combination of democracy and scientific enterprise stand out more clearly than does this fact. Concurrently, however, the necessity for defending the first partner in this joint undertaking is spurred and spurred again — often as a result of economic or ideological maladjustment. Both of these issues are considered in *The Review* this month — the first through articles drawn from addresses incident to the graduation of the Institute's Class of 1939; the second in addresses presented at the Alumni Day conference, "The Technology of National Defense." ¶ The importance of the questions is matched by the competence of the writers: VANNEVAR BUSH, '16, formerly Vice-President of the Institute, now President of the Carnegie Institution of Washington (page 397); SIR HAROLD HARTLEY, formerly lecturer in physical chemistry at Oxford, now Vice-President and director of scientific research of the London Midland and Scottish Railway (page 400); LOUIS A. JOHNSON, The Assistant Secretary of War (page 404); HAROLD R. STARK, Rear Admiral in the United States Navy, recently named chief of naval operations (page 405). The ninth M.I.T. library reading list (page 402) was compiled by MARGARET PAIGE HAZEN. ¶ The notable events of Alumni Day we report this month (pages 403, 406). Particularly significant is PRESIDENT COMPTON's delineation of the relation of the Institute and the future (page 407). ¶ JULIUS A. STRATTON, '23, Associate Professor of Physics and chairman of the Staff-Administration Committee, contributes to the *Institute Gazette* a discussion of the work of the committee, another recital of Institute activity in which Alumni will be interested (page 410). The *Gazette* presents likewise the remarks of DAVIS R. DEWEY, Emeritus Professor of Political Economy, at the 25th anniversary of Course XV (page 408). ¶ To the cover this month returns Harold E. Edgerton, '27, Associate Professor of Electrical Measurements, with a stroboscopic photograph (exposure 1/50,000 second) of a Pelton wheel. Enthusiasts who would emulate will find an Edgerton stroboscope at the New York World's Fair, in the photographic garden of the Eastman Kodak Company's exhibit, to provide opportunities for amateurs to use their own cameras for split-second work.

*The Review is not published during the summer months following July. This issue, therefore, concludes Volume 41. Number 1 of Volume 42 will be published on October 27 and dated November. Readers who bind their copies are reminded that if they possess nine issues of Volume 41, their files are complete. An index to the volume will be ready on August 15 and will be supplied post-free upon request.*

No. 18

## Just for Fun! A CHALLENGE TO YOUR INGENUITY

SUPPOSE a solid cylinder of mass  $m$  and radius  $r$  rests on a hard, level surface. The coefficient of sliding friction between the cylinder and the surface is  $\mu$ . A constant force  $f$  acts on the axis of the cylinder, as indicated. Find  $s$ ,  $t$  seconds after a start from rest.



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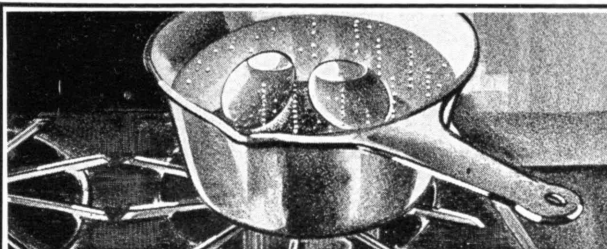
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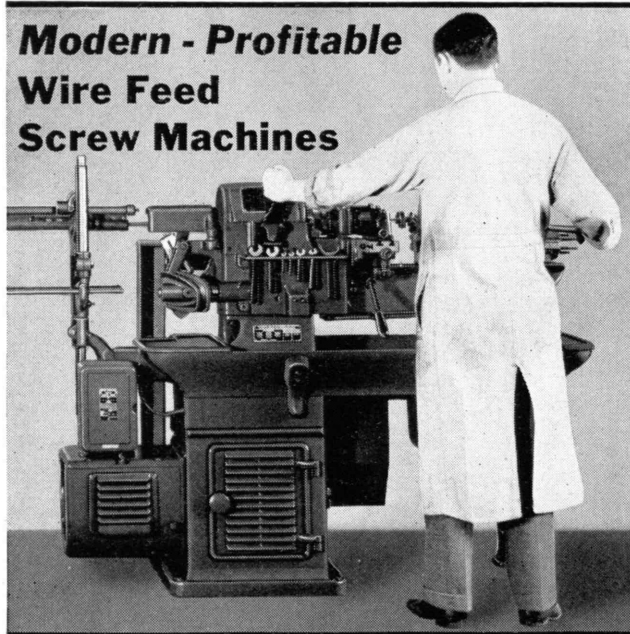
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## MAIL RETURNS

### Keep the Laboratories Open

FROM ALBERT J. GRACIA, '28:

The closing of Professor P. W. Bridgman's laboratory to citizens of totalitarian states (*Science*, February 24) will, I presume, not greatly hinder the advance of science in those states. But it indicates an alarming trend in scientific thinking. Carried to a logical end, this way of thinking would use science as a counterblow of reciprocity in whatever field the battle raged — politics, religion, or race.

Germany has barred the Jews from its universities; Bridgman has closed his laboratory to citizens of dictator countries. Wherein do these acts differ except in degree? To what lengths will Bridgman's ban be carried? What shall we say to the citizens of totalitarian countries of South America? Shall we permit Cubans to enter our halls of learning? Or shall we bar only those who have developed the art of dictatorship to the highest degree?

Alumnus Harrison W. Smith, '97 (*The Review*, June, page 336), makes an even more disingenuous proposal when he suggests that Technology accept citizens of the totalitarian states in the courses in humanities but refuse to open the science courses to them. Next we shall have a plea to drop instruction in the German language, sauerkraut will become democracy cabbage, and we shall be back in the benighted days of 1917.

It seems to me that now, of all times, men of science should cultivate the true scientific outlook, a thing so simple it is easily overlooked. The true scientific attitude is the refusal to regard our own desires, tastes, and interests as affording a key to the understanding of the world. To remember this consistently in matters arousing our passionate partisanship is by no means easy, especially where the available evidence is uncertain and inconclusive. If science is to forge ahead, if it is to be free to build for the future, it must not be bound by the fetters of prejudice and hate today.

Cuyahoga Falls, Ohio

### Appreciation

FROM PERCY BUGBEE, '20:

I thought I should express to you my interest in, and appreciation of, the very excellent article, entitled "The Deadly Guest," by Donald Holbrook in the June Review. Those of us who are in the fire-prevention business can appreciate better than anyone else the value of this sort of contribution. The article is certainly well written and ought to interest every reader of *The Review*.

Boston, Mass.

FROM TRUMAN YOUNG:

May we compliment you upon the fine article entitled "The Deadly Guest," which appears on page 357 of your June issue.

Pyrene Manufacturing Company, Newark, N. J.

### Are There Others?

FROM JOHN W. BERETTA, '23:

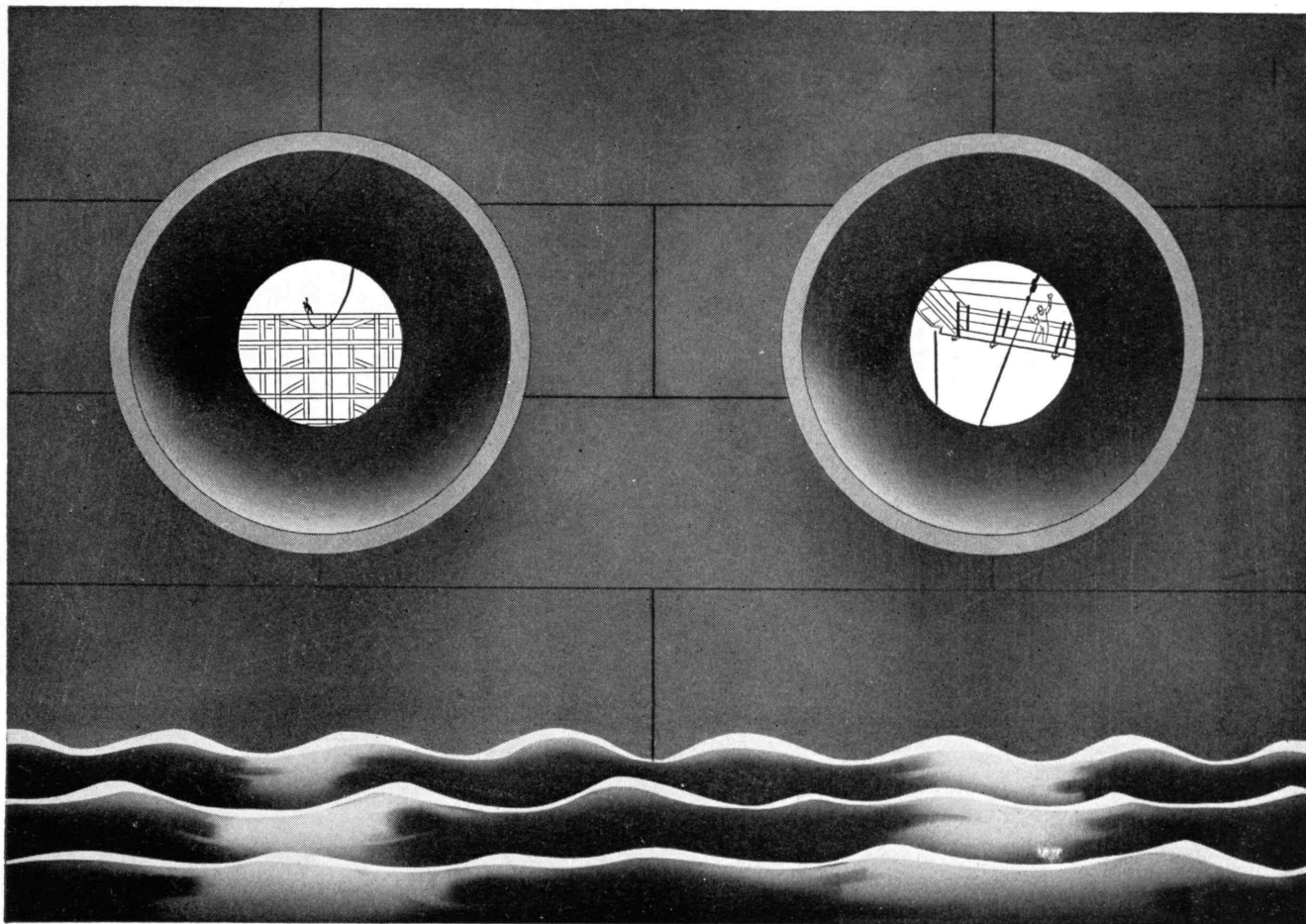
... I found most interesting your article entitled "Technology at the Fair" in *The Review* for May. This was a most informative article, and I was very proud to note the prominent part that Technology men are taking in connection with the great fairs. I noticed one omission, however, to which I should like to call your attention.

E. E. McKeen, '23, I, has had a very prominent part in connection with the New York Fair, but I noticed no mention of his name at any point. If I am not mistaken, he was resident engineer on the Triborough Bridge in New York and also was resident engineer on the Whitestone Bridge. I believe I am also correct in stating that he was in charge of the steel erection for many of the buildings at the New York Fair, including the Trylon and Perisphere. Mr. McKeen is an engineer with the American Bridge Company. . . .

Mr. McKeen also has another distinction in that he was resident engineer on the Oakland Bay Bridge in San Francisco which made possible the site and location for the Golden Gate International Exposition. This fact, I believe, merited him mention and might possibly give him the distinction of being one of the few Technology graduates who had a vital part in both world's fairs. . . .

San Antonio, Texas





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A Chinese sampan coolie.  
Singapore

Robert K. Phelan, '30

# THE TECHNOLOGY REVIEW

Title Reg. U. S. Pat. Office

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

VOL. 41, NO. 9

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From a photograph by Harold E. Edgerton, '27

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Editor

FREDERICK G. FASSETT, JR.

Publisher

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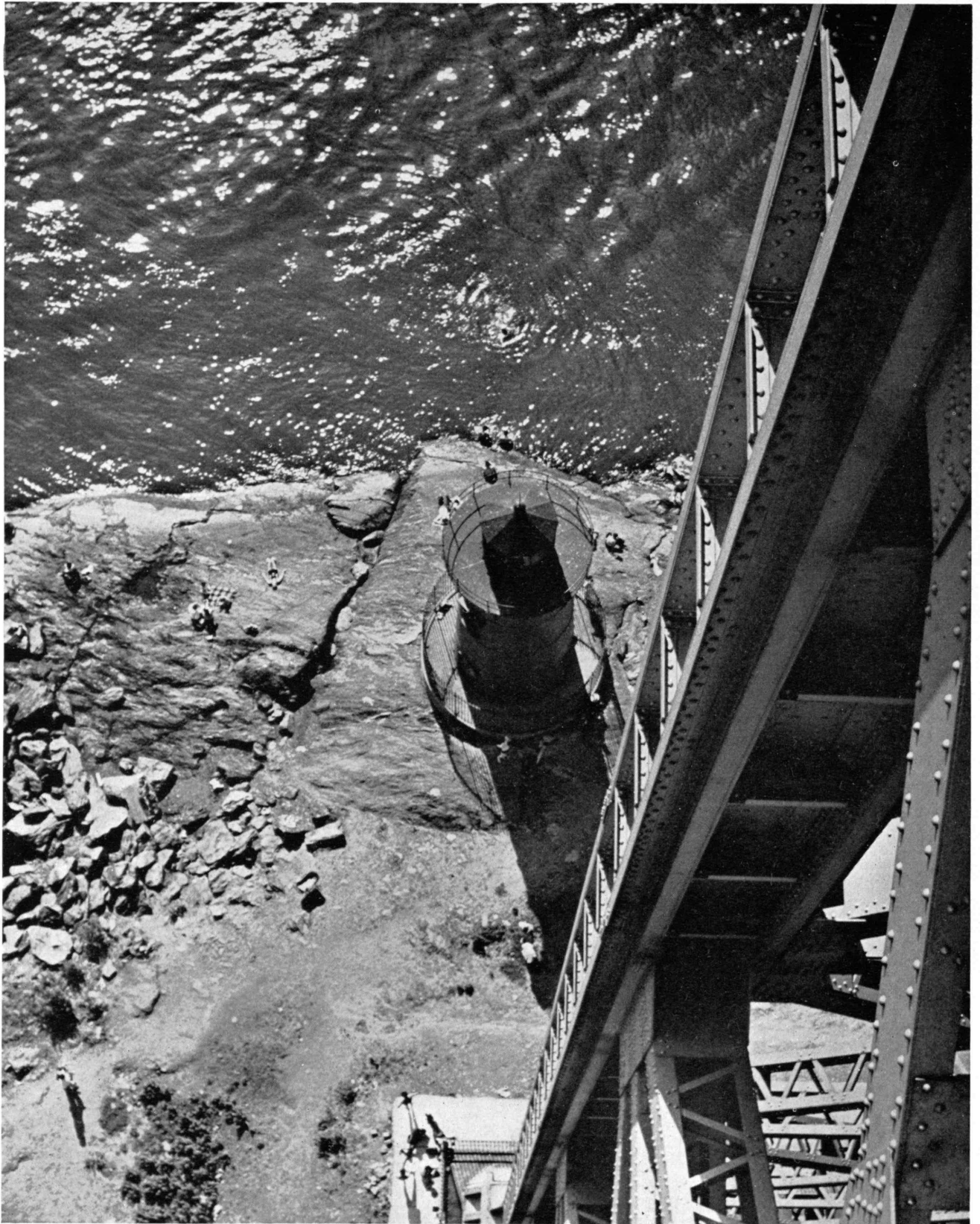
Staff

Editorial: MARJORIE FULLER, JANE McMASTERS. Business: MADELINE McCORMICK, RUTH KING

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Robert D. Harvey, '38

#### CITY SUMMER

*Swimmers and picnickers make the most of possibilities at the foot of the Manhattan tower of New York's George Washington Bridge*

# THE TECHNOLOGY REVIEW

Vol. 41, No. 9



July, 1939

## The Trend of Affairs

### *The Inventing Breed*

THE fact that, of all forces acting on our society, patentable inventions are creating the most obvious and dramatic changes has not escaped our analysts. Although attention is focused mainly on the economic and social characteristics of the inventions themselves, a little is directed now and then at the men who make them. Recent studies tend to confirm an increasing amount of evidence that inventors are not as other men.

Popular opinion on the major points of difference is tersely summarized by the description which the personnel of one large plant evolved for the line of offices in which the inventors and designers worked. They called it "Bughouse Row." The connotations, however, are not merely libelous but also fallacious, for if inventors differ markedly from the general population in mental balance, we have a real case of everybody's being out of step but Johnny. Actually, these disturbers of the peace—for certainly they keep society in a constant state of turmoil—differ from the masses by their shrewd choice of parents (they tend to pick well-to-do ones), by their mobility, by marrying on a far more intensive scale than ordinary folk, by making more money than most taxpayers, and by staying alive interminably.

As a coincidence, there died in April a noted inventor, Henry A. Wise Wood, whose career in many respects can be described as typical of the professional inventor. And the once-in-a-lifetime type is not considered in the following conclusions. Wood, holder of over 400 patents, mainly on printing machinery, was born on March 1, 1866, the son of Fernando Wood. The latter was three times mayor of New York and for more than 20 years a member of Congress. Sanford Winston's study of 371 of the male inventors in the "Dictionary of American

Biography" shows that, for those men about whom the information could be found, perhaps half came from professional or business classes, the remainder from farming and artisan classes—a ratio that is markedly at variance with the percentage of these classes in the population. Even more striking are the results of a study of leading scientists, made by J. McKeen Cattell. He found that over 40 per cent came from professional classes, that more than one-half came from the *one* per cent of the population best able to produce them, and that the son of a successful professional is 50 times more likely to become a leading scientist than is a boy taken at random from the community. Quoting Mr. Cattell: "If performance were determined by heredity alone, there might be expected to be among one thousand leading scientific men some 40 mulattoes and some 40 of illegitimate birth, whereas there is probably not one of either class."

These findings tie in well with the persistent thesis in writings on achievement and intelligence that "cultural accumulation and cultural processes are inherently more powerful than men in producing changes." A child inherits an environment as well as a set of chromosomes; and many sociologists feel that differences in intelligence between classes and races are due more to the former than the latter. It is therefore to be expected that inventors, that is, professional ones, tend to be considerably better educated than the general public. Most contemporary inventors of note have received an engineering training.

Another characteristic of inventors is mobility, amply illustrated by Wood, who was born in the city of New York, was educated at Media, Pa., traveled considerably in connection with his business and public activities, and further expressed his interest in movement by being a member of the American Geographical Society, the New York Yacht Club, and the Cruising Club of



America. Winston's study of the inventors in the "Dictionary of American Biography" shows that only 35 per cent of those born in this country were living in the states of their birth at the time of their last important work, the comparative figures for the native-born population between 1850 and 1890 being about 77 per cent. Yet it is probable that inventors are slightly less mobile than are most groups of eminent men.

The Russian peasants have a saying that if a man is a fool when he is 20, he will be a fool for the rest of his life; inventors bear this out by producing their first inventions as a rule before they are 30. It is significant that Wood was awarded the Elliott Cresson Gold Medal of the Franklin Institute in 1908 when he was 42 years old. As Winston points out, the evidence does not support Havelock Ellis' dictum that eminent men "live a long time for the excellent reason that they must live a long time or they will never become eminent."

Whatever the reason, however, inventors live a long time. For those in the "Dictionary of American Biography" the average age at death was 71 years — a figure which should be compared with the average life expectancy of men at about 30 rather than with the average age at death, since inventors who die very early don't get into biographical dictionaries. Wood, by the way, died at 73 years.

Wood typifies the inventor also in that he received considerable cash as well as credit. He was president, and later chairman of the board, of the Wood Newspaper Machinery Corporation, and some years ago was affluent enough to present a \$100,000 high-speed press to a school for newspaper apprenticeship in New York. Most inventors don't do quite so magnificently well, but again referring to the "Dictionary of American Biography," some 60 per cent were prosperous and less than five per cent could be considered poor. Thomas Edison, Elihu Thomson, Carleton Ellis, '00, Henry Ford, Lee De Forest, the Wright brothers, and Alexander Graham Bell — to name some outstanding examples — are, or were, no fit prospects for the W.P.A.

As with most eminent men, inventors have a very high marriage rate. In one group of 710 inventors, 92 per cent reported that they were, or had been, married; 24 men did not answer. Of the 355 inventors in the group for whom Winston found data, 96 per cent were married. The three who had separated from their wives gave that group a high divorce rate for their times, for the rate for all men who died at 65 or over was 0.31 per cent in 1890

and 0.34 per cent in 1900. But of the 710 inventors mentioned above, only two reported themselves as divorced. Even if the 24 who did not answer this point are likewise considered as divorced, their rate is still far below that of the general population, which dissolves about one out of

five marriages. Like most eminent persons, inventors tend to marry late in life.

Were certain character traits, like persistence and independence of tradition, also compared, inventors would differ even more markedly from the plebeians who profit by their genius. But even by those biosocial traits and trends which lend themselves to relatively easy measurement, inventors show that they are much like other aristocrats of achievement, and of a tribe for which the times seem propitious.

### Checking the Bleeders

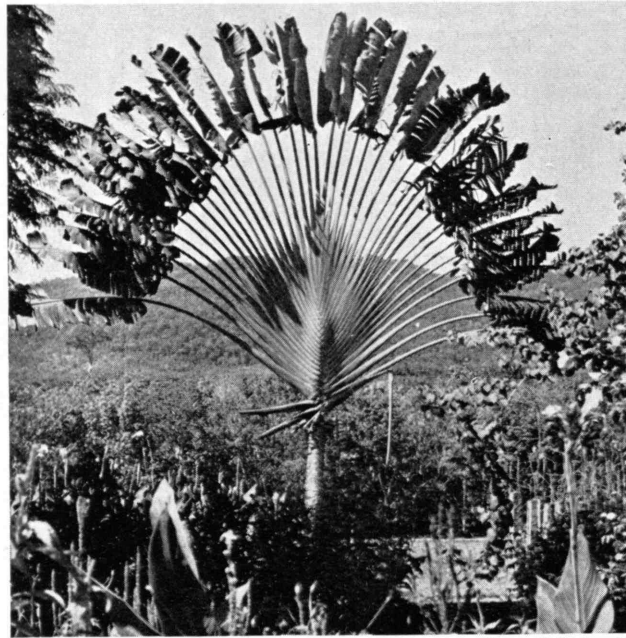
A DISEASE, the sole visible symptom of which is the disease itself, treatment of which may

prove to be the chief means of its spread, and which may be allayed but probably never cured, may prove to be one of the most curious enigmas of medical science, in spite of the fact that its action and cause appear to be comparatively well understood.

Hemophilia, the affliction wherein the victim's blood clots so slowly that death may result from a minor cut and wherein a tooth extraction becomes a major operation, has been a subject of medical concern for about 150 years. Discussion of the disease from year to year has centered about successively new methods for clotting the blood artificially — none of them wholly satisfactory.

New hopes for the hemophiliacs have been acclaimed since the day, several months ago, when two physicians of Philadelphia — Drs. William R. Brown, Jr., and Arthur Steinberg — announced that oxalic acid can be used effectively to clot blood in the normal length of time. This was an instance of stumbling upon a previously camouflaged scientific fact because, although the acid had long been known to be present in the blood, doctors believed that it was responsible for the lack of coagulation. It is yet too early to be sure that oxalic acid can do more to save the lives of hemophiliacs than can any of the parade of remedies for which claims have been made in the past.

This parade was led by the sulphate of soda which was the household remedy of a century and a half ago. Our best description of its use lies in a short article by Dr. John C. Otto, as it appeared in 1803 in the *Medical*



Robert K. Phelan, '30

#### PATTERN

*The traveler's palm, whose leaf-stems shelter a water-filled pocket. This one is in the Malayan state of Kedah*

*Repository*, first American medical journal. It was Dr. Otto's only written work and, since it was the first adequate description of hemophilia — thus fixing the attention of the medical world upon it as a medical entity — was his most important contribution to medical science. Typical of scientific dissertations of that period before the discovery of the germ theory of disease and before the science of medicine was legitimately out of the stage of classification, Otto's paper was little more than a record of the isolated cases which had come under his observation and of the seemingly successful application of the sulphate of soda. However, his description of the observable progress of the disease was as accurate and as full as almost any made since.

Dr. Otto explained that 70 or 80 years previously a woman in New Hampshire had "transmitted the following idiosyncrasy to her descendants. . . . If the least scratch is made on the skin of some of them, as mortal an hemorrhagy will eventually ensue as if the largest wound is inflicted." In many cases the wound almost healed, but "generally about a week after the injury, an hemorrhagy takes place from the whole surface of the wound, and continues for several days . . . ; the strengths and spirits of the person become rapidly prostrate; the countenance takes on a pale and ghastly appearance; the pulse loses its force . . . ; and death from mere debility then soon closes the scene." The customary remedies — barks, astringents, strong styptics, and opiates — were tried in vain. But ". . . a few years since, the sulphate of soda was accidentally found to be completely curative of the hemorrhagies. . . . An ordinary purging dose, administered two or three days in succession, generally stops them." Hemophiliacs, who were numerous within this one family, had become entirely confident of help from the remedy, and "the prescription being known to the whole family, application is rarely made to a physician, and when it is, it is rather with a view of directing him how to proceed, than of permitting him to make a series of trials and observations that might hazard the life of the patient. . . . It is a surprising circumstance that the males only are subject . . . and that all of them are not liable to it. . . . Although the females are exempt, they are still capable of transmitting it to their male children."

But the sulphate of soda as a remedy for hemophilia soon became the nucleus of a large discard pile which later included astringents applied to the wounds of hemophiliacs, powders and dusts sprinkled onto their

issuing blood, and fluids injected into their blood streams. Oxalic acid may eventually be added to the pile. If it is, scientists will renew the search for a remedy; if it is not — if it proves to be successful in a large percentage of cases and if it brings long lives to hemophiliacs — the malady may eventually present an even greater problem.

Physicians know now that hemophilia is strictly hereditary and that it is caused by the inactivity of the particular gene which normally gives man's blood the inherited characteristic of clotting readily. The gene's inactivity is the result of a natural mutation of the type which is believed to be the basis of all natural selection and evolution.

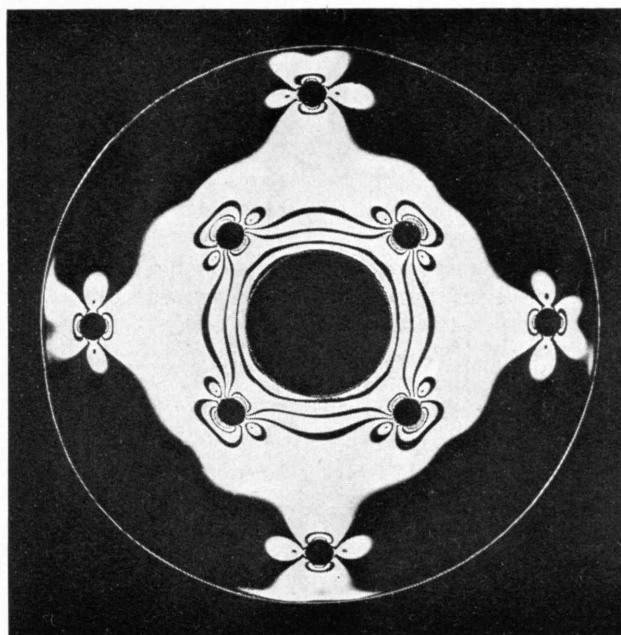
Neither oxalic acid nor any other remedy can now be called a cure for hemophilia. On the contrary, it is held that such palliatives could be the major means of spreading the disease, for they would allow hemophiliacs to mature and propagate, unless a few principles of eugenics

were rigidly applied. Man would be disturbing the process of natural selection. In place of the natural process he would have to substitute a workable process of artificial selection, or the time would come when more and more human beings would be natural bleeders whose only recourse would be to the injections of oxalic acid or some other drug. A larger and larger number of men would gradually come to resemble so many soft-shelled eggs, needing artificial treatment to gain the necessary protection against their environment so that they may approach normal life expectancy.

The only sure method of ridding the world of hemophilia, on the basis of present knowledge, would be a law requiring compulsory sterilization of persons known to be hemophiliacs or offspring of hemophiliacs; obviously, nonsurgical sterilization — possibly by radiation — would be necessary. Under the present interpretation of human freedom in the democracies, as applied to the subject of sterilization, there seems to be little likelihood that such a compulsory bill will be passed in the near future. A similar bill on its way to the British Parliament at the present time specifies that sterilization can be carried out only with the consent of the persons in question.

### Bouncing Pigments

IF Junior leaves a tennis ball on the top of the back steps, and if the iceman thumps up those steps under a 200-pound load, the ball will probably bounce down,



DESIGN

*Photoelastic stresses set up by centrifugal force in a Bakelite disk rotating at a speed of 3,100 revolutions a minute*

*Hetenyi, Westinghouse*



step by step, and come to rest on the ground. Bouncing down, it loses potential energy; and at rest on the ground, it may be called a physical system in the state of minimum potential energy. Now between the tennis ball and the pigment in the paint on the back steps there may not appear at first to be much connection. Yet there is — and the phenomenon of loss of potential energy supplies it.

Suppose we substitute for the tennis ball the atoms of a chemical compound — say titanium oxide, which is used as a paint pigment. The atoms hold together in a three-dimensional pattern by the forces of mutual attraction and repulsion. The number of conceivably possible patterns of arrangement is well-nigh unlimited. Which one the atoms will assume depends upon the potential energy of the group — the summation of the attractive forces which the atoms exert on each other. But like the ball on the shaking steps, the atoms tend to take the pattern of least potential energy — that is, to bounce down the steps to the ground. For them to do so, however, something must shake the steps. Corresponding to the thumping tread of the loaded iceman is the heat motion of the atoms making up the pattern; this does the shaking. The greater this motion, ordinarily, the more open the pattern of the crystal. Surprisingly enough, however, the crystals do not always act as would be expected. Sometimes in conditions of low temperature, where a close-packed pattern would be predicted, an open pattern is formed. The paint pigment atoms, thus, are not necessarily so responsive to shaking as is the tennis ball. And if we can reach in and stop their bouncing at the point when the pattern is the best suited for use in paint, we have a possibly valuable industrial technique. Titanium oxide, for example, appears in three pattern forms. If one of these is preferable to the others because of better “covering” or light-reflecting properties, or because of greater resistance to deterioration, it may be good business to pick up the atomic tennis balls after two or three bounces and never let them go clear to the bottom.

The way to get hold of the ball, or to interrupt the molecular shaking, is implicit in the theory of polymorphism which has been worked out by Professor Martin J. Buerger, '24, of the Institute's Department of Geology. Professor Buerger's theory, a part of the crystallographic work with which he has been identified for years, is that every chemical compound is capable of forming an indefinite number of crystal patterns dependent upon the atomic forces within the crystal. Each pattern has a vibrational scheme of a certain energy. The schemes of vibration capable of containing large amounts of energy without tearing themselves to pieces are assumed at high temperatures and often belong to the open patterns. At low temperatures the open patterns collapse to a more closely packed form.

Slight impurities in the compound may fit into the open spaces of the crystal at high temperatures and may hold it, even on cooling, in the extended pattern. This is one explanation of why the atoms do not entirely correspond with the ball in bouncing all the way down the steps. A second is that during the process of formation of the crystal, the matter may be taken through a molecular state possessing a certain pattern

and may become “stuck” there, much as the ball would if it landed in a pan of molasses candy cooling on the third step from the top.

During the past three years Dr. Mortimer C. Bloom, '22, has been occupied with investigation and tests of this theory, being especially concerned with the chemical aspects of the problem. The resulting knowledge of how to form unstable patterns of crystal arrangement can lead to ability to control the pattern which shall be formed by a given compound, or to predict the pattern which will be formed under certain conditions. Thus the atomic tennis ball — the titanium oxide pattern — may be stopped in its bouncing when it has reached a desired step; thus knowledge of polymorphic processes may find direct industrial application in the conversion of less desirable forms to the one desired, or in establishing ways for the direct manufacture of the desired form.

### *Measuring Stress*

STRESS in a mass of concrete is to strain much as the colic of the boy filled with green apples is to the cramps which he suffers. Stress is essentially pressure in pounds per square inch; strain is change in dimensions, or deformation produced by stress. Ideally, one should be able to connect a meter to green-apple Johnny's cramps and, by determining their amount, to work back to the colic which occasioned them and to determine its intensity. This scheme is essentially what has been common practice in the reckoning of stresses within concrete structures. By the use of strain meters, engineers have measured minute deformations and have worked back from these figures to calculate the unseen stresses which led to deforming movements. At best, however, the scheme is roundabout. Though the strain meter does indirectly measure stress, too many variables intervene, and too many assumptions must be made in the calculations. A more nearly direct measurement of stress is therefore highly desirable — and it appears now to have been made possible as the result of a 12-year endeavor carried on by Roy W. Carlson, Associate Professor in the Institute's Department of Civil and Sanitary Engineering.

The importance of this development rests not merely on the fact that we are using more and more concrete to build bigger and bigger dams. Determination of stress is of fundamental significance in all concrete construction because, besides permitting an evaluation of the safety of a structure in service, it may be expected to simplify and to render more accurate the theory underlying the design of concrete structures. At present, design itself and the evaluation of margins of safety in concrete structures are based on calculated stresses. Measurements on structures with the purpose of determining their safety and the manner in which they support applied loads have been measurements of deformations, not of stresses. From such measurements, efforts to calculate the stresses have been made in devious ways. But deformations occur from causes other than load; the relation between stress and deformation, moreover, involves other factors, such as the age of the concrete, the duration of the stress, and the magnitude of the stress. In sum, too many extraneous agencies have to be reckoned with; all

the cramps may not be due to the colic alone. With Professor Carlson's new meter, the engineer will be able to cut through much of the extraneous and get the more direct statement which he needs.

The new meter follows upon the development of strain meters for which Professor Carlson is well known. Buried in the concrete of many major dams throughout the United States, Carlson strain meters have measured the minute movements of concrete and thus have done manful service in the indirect ascertainment of stresses. The principle employed in the strain meter is that of arranging loops of fine steel wire over porcelain spools so mounted in a container that slight deflections of the ends of the container alter the electrical resistance ratio of the wire loops. This alteration is passed on through electrical circuits connected to the meter.

Logical descendant of this ancestor, the new meter consists essentially of two circular steel plates whose edges are bonded together to inclose a thin layer of mercury. At the center of one face of this steel and mercury sandwich is a movable diaphragm which is connected to a strain meter of the type already described. Bedded in the concrete of a structure, the mercury sandwich is subject to pressure, or stress, just as is the concrete surrounding it. The mercury responds to this pressure by

minutely deflecting the movable diaphragm, which in turn alters the electrical resistance ratio of the loops of fine steel wire in the strain meter. This alteration provides the desired measurement.

More than 2,000 Carlson strain meters have been used in such structures as Boulder, Norris, Grand Coulee, Tygart, and Hiwassee dams. The new meter, which will probably outmode them, likewise has during its development been put to test in actual structures, among them the Guntersville Powerhouse development in Alabama and the Hiwassee Dam in North Carolina. Impressive test results have been secured at the Institute, where Professor Carlson has mounted these meters in cylinders of concrete, applied known stresses to the cylinders, and found stress registered faithfully and accurately by the meters. Whether the concrete was young and plastic or old and relatively rigid made no difference in the ability of the meter to indicate stress. The meters thus tested are the fifth type to be developed during Professor Carlson's 12 years of work.

The Charles B. Dudley Medal of the American Society for Testing Materials was presented to Professor Carlson at the annual meeting of the society last month, in recognition of his work in developing, testing, and presenting a theory of concrete shrinkage.

*A New York river scene, with the quality of engraving on steel*



*Paul J. Woolf*



## Modern Marker

LONG stretches of imagination are not always required to detect milestones in the progress of the arts, and, contrarily, newly placed markers are not always easy to detect. But it seems entirely possible even at the short range of a month that the recent formal dedication of the new building which now houses the Museum of Modern Art in New York City may have been one such marker.

There are of course by now a substantial number of buildings in America which have been designed in accordance with the philosophy of what may, for want of a better term, be called the Modern architect. There may have been among them more beautiful buildings and more useful buildings than the new glass structure on West 53d Street. But it is doubtful if many among them will exert a greater total influence.

The general attitude which over a decade has resulted in the rapid growth of American appreciation of Modern art will not be changed by the physical phenomenon of a new and pleasant house. This attitude has never been one of patronage. The costs of the long-range educational program have been borne principally by a few public-spirited men who found Modern art important and who were able to pay to help others find the same understanding. But each year more people of modest means have participated in this support through membership. After people the country over have had the opportunity of inspecting the current show during this summer, this popular support should grow and also spread into other

centers. The present purpose is not to commend the selection of the paintings which make up this show — though it has been intelligent and comprehensive — but rather to comment on the building itself.

It is not a building that will command universal applause. Nor is it a building that deserves some of the canards which have been leveled at it by those who take opportunity for such things. The glass façade on 53d Street is admittedly uncompromising from the outside; but a museum's importance is within, and here the wall is engaging. The entrance is calculated to draw visitors easily and without difficulty to the galleries themselves. These in turn are arranged flexibly — at the moment the arrangement seems excellent for circulation of large crowds or for viewing pictures when the crowds are small, but not suited to meeting both needs at once. The public theater where the history of motion pictures may be shown is comfortable and serviceable. The private lounges are more than that. The offices are in strange colors, but these are said to be experimental. The much discussed holes in the roof canopy have far more significance to the members' lounge than they seem to have to the passer-by on the street.

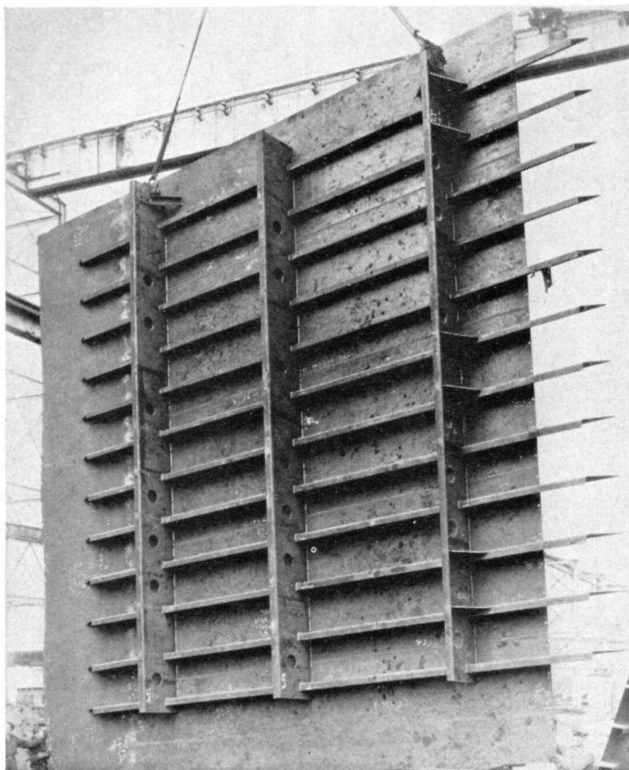
The single greatest success, architecturally speaking, is perhaps the glass wall on the rear, which affords a view into the garden in which Modern sculpture has been knowingly placed. Fully to appreciate this transparent wall one must visit the museum on a rainy day. Then the virtue of bringing the outside in becomes evident.

The architects (Philip L. Goodwin and his associate, Edward D. Stone, '27) have admittedly been playful at times. The playfulness may be forgiven whether it manifests itself in the Swiss-cheese holes in the roof or the rather unintelligible abstractions which serve as lighting fixtures in the halls. Nor have the architects been entirely original in their adoption of some Modern motives. But in their general treatment there are sincerity of purpose and, more important, sureness in direction and success in accomplishment.

Europeans who visit this gallery are loud in their praise of the fact that America has a place where Modern art may be viewed as a whole rather than in the separate pieces which one perforce sees at a group of private galleries in Paris or London. The President of the United States has conveyed his official endorsement of the Modern movement by participating in the opening ceremonies. But the importance lies really in the promise for the future implicit in the past activities of the organization responsible.

## Airing the News

THE technique of broadcasting newspapers, which The Review reported in February (page 157), spreads as time passes. Pioneering, the St. Louis *Post-Dispatch* began issuing a radio edition on the ultrahigh frequency of Station W9XZY, with a broadcasting range of 20 to 30 miles, transmitting a four-column page, eight and a half inches long, in 15 minutes. Since that initial undertaking which occurred late in 1938, a number of other facsimile radio newspaper experiments have been launched. (Concluded on page 416)



WELDING

Linde Air Products Company

... cut by 15 per cent the weight of the 18,500-ton oil tanker for which this section of a longitudinal bulkhead is destined. The vessel is the first all-welded ship of its size

# Opportunity for the Professions

## *Special Knowledge and Particular Philosophy Distinguish the Professional Man—Of Him, a New World Makes Larger Demands*

BY VANNEVAR BUSH

THE fact that the application of modern science has greatly altered the world in which we live has been treated many times, so that I do not propose to expound the marvels of scientific accomplishment. Professional men who operate in this altered world, however, find that the path to professional accomplishment is vastly different from the one pursued by the professional men who preceded them. Competition is keener; opportunities are broader. The obligations of professional men are vastly changed in a new sort of world. This change I propose to discuss.

First, however, let me present very rapidly the nature of the alteration which science has produced. It has primarily furthered three things: protection against the environment, interdependence, and intercommunication. These have brought a greatly increased average standard of living; they have opened up still greater opportunities for the race; they have introduced grave transitional problems to which civilization may succumb before it can reap the full benefits. Each aspect has a multitude of ramifications, but we are here concerned primarily with those which most closely affect the position of the professional man in society.

Protection against the environment has meant modern housing and modern sanitation. The food supply has been increased, diversified, and safeguarded. Modern medicine has rendered life less harrowing, but it has also perpetuated the relatively unfit. We have a declining birth rate and a relatively stabilized population. Pressure on the food supply no longer menaces. Mental disease is almost completely baffling and is increasing.

Interdependence has been intensified by the economies incident to mass production and the lowered cost of transportation. Free price competition pays closest attention to the advantages of the moment and largely ignores the long-time instability of the resulting structure. We are enabled to acquire relatively great physical comfort in return for a low individual output of effort, but the system by which this is accomplished is vulnerable. Its cyclic performance produces distress. Local disruption has always been the price of an advancing standard of living, but with increasing complexity the effect of minor disturbances is magnified. Alongside of those altruists who seek to ameliorate distress by far-seeing reforms are found those who would utilize distress

to their own advantage. A high degree of interdependence tends to concentrate power in the hands of individuals and closely knit groups.

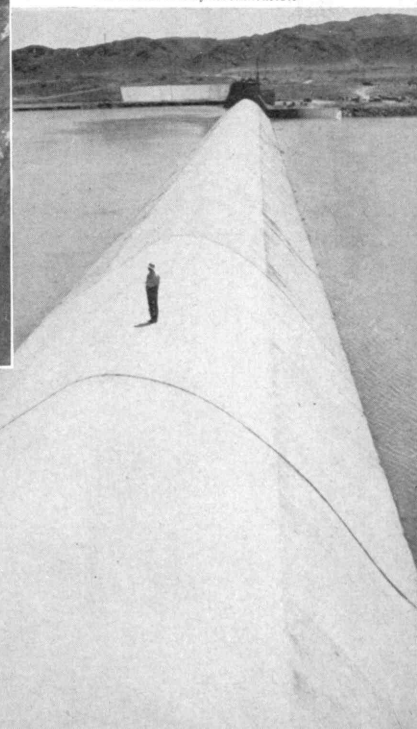
Modern intercommunication has shrunk the world. Inexpensive publication and wire and, more especially, radio communication have created modern propaganda. This is a far cry from the days when Genghis Khan required three months to communicate with his outposts of empire. War preparation has become mechanized and nationalized. Rapid transportation on land, sea, and air threatens to render the advent of war abrupt and all inclusive. In spite of all censorship and trappings, the horror of war is understood and feared by whole peoples. Modern intercommunication may bring war or may enable mass sentiment to avoid the advent of war; it is too early to tell.

All these trends we recognize, and the discussion of their consequences fills many books. It is easy to generalize or merely to view with alarm. The problem before

us, however, is highly specific. What will be the life and opportunity of the professional man in the next generation? In view of the altered world—a world which will most certainly go on in

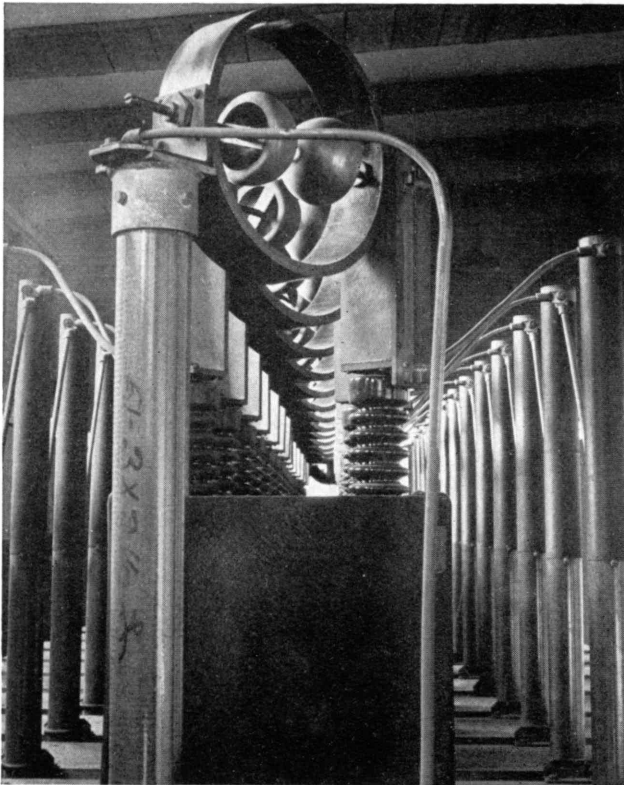


W. W. Lewis, '89



U. S. Bureau of Reclamation

"... Protection against the environment." Above: Erosion in Golden Canyon, Death Valley, California. Below: Overflow weir of Imperial Dam on the Lower Colorado River, near Yuma, Arizona



Westinghouse

*"... Intercommunication." End view of 15 capacitors and gaps in a surge generator which puts lightning to work testing distribution transformers. This apparatus can produce a lightning wave front of 1,500,000 volts a millionth of a second*

one way or another — what is entry into a profession likely to mean to the individual in the years to come? What special attributes does the professional life now take on? These questions can be answered only by time. With a grasp of the changing world in mind, however, there stand out clearly several points in regard to the circumstances surrounding the professions, to which I would direct attention. To appreciate the effect of these points we need to define the professions; we need to inquire what constitutes a professional man. This standard is often none too clear.

The possession of a degree is certainly not a sufficient criterion of the professional man. With 1,100,000 students in 1,700 colleges in this country, this point certainly does not need elaboration and is, in fact, more clearly appreciated by college men themselves than by those outside of academic life. Not nearly so clearly appreciated is the fact that true professionalism is not a matter of labels or trappings at all. Neither degrees, nor admission to the bar, nor license to practice, nor legal conveyance of privileges, nor imposition of restraints can create a professional man; they supply only a mechanism. Within their framework may operate those who are far from professional, and many a professional man of the highest caliber has no need for them. Professionalism is not a matter of mysticism or exclusiveness; it is not the possession of a special language or the furtherance of a cult. True professionalism has just two inherent essential characteristics: first, the possession of special knowledge and, second, adherence to the professional philosophy. Both of these are as old as

the first formal organizations of society. The possession of special knowledge connotes a long period of preparation and of experience as a neophyte or apprentice before full admission to the profession is achieved. This is the primary criterion. The knowledge must be necessary to, or desired by, the world, so that the world will applaud its acquisition; it must be knowledge which, because of its profundity, is barred to the multitude; and it must, of course, be sound knowledge. The second ingredient — adherence to a professional philosophy — is more completely the individual's own affair. Without it he may have great material success and may secure the acclamation of his fellows, but without it he cannot truly be a professional man.

I cannot set up a diagram, or even a complete professional code, which will define the professional philosophy; nor would any two men define it alike. Professional philosophy has many attributes. It involves much more than the spirit of service, for service means many things and only too often implies some sort of inferiority. The word ministrations is nearer to the heart of the matter. Dignity and authoritativeness are of the essence of professionalism. The professional man ministers to his client. The latter may be a whole group or a whole people, but the advice of the professional man proceeds from a superior knowledge in a special area of competence. Since he can be effective only when he is respected, his insistence upon respect proceeds from no undue egotism. The test is whether he is known as a modest man among his colleagues and whether he confines his assurance strictly to his own special field. Since the earliest days the professional man, after his advancement to the full status of his profession, has spoken with authority; and as long as man has been baffled by the complexities of his surroundings, the advice of the professional man has been listened to with respect.

This — the central core of the matter — prevailed when the first medicine man sat in council beside the chief of the tribe. All else in the professional philosophy is accessory to this primary function of ministrations. The professional man puts first the acquisition and transmission of the truth, and he derives his satisfaction from the knowledge of his influence and from the acclaim of his colleagues. It is not necessary that he forego the material rewards of the world; but if these occupy the first place in his thoughts or furnish his controlling incentive, he is not truly a professional man. Some of the ancient monastic orders placed service to mankind so far above all else that they denied themselves all material comforts and all the solace and distraction of family life. They have earned in all ages the profound respect called for by their courage and devotion as they brought light into the darkest corners of the earth. Their modern successors carry on the work in just the same spirit, and to them be all honor. Professional men generally have not thus subjugated all else to their main objective. Much can be said in support of the thesis that the professional man is justified in insisting on a reasonable remuneration in order that he may work most effectively. We have had many admirable examples of individuals of great wealth who, as scientists of note or in other ways, have exemplified the truly professional spirit. The young man just starting upon his career



quite properly places great weight upon his responsibility to his dependents, and aims, as he advances professionally, to secure an adequate income. Yet it cannot be repeated too often that the individual whose primary objective is material acquisition, no matter what degrees he may append to his name, no matter how prominent he may become in the public eye, no matter what the world at large may think, is not entitled to admission to the select company of those who truly possess the professional philosophy.

The statement is sometimes made that only the independent consultant is really a professional man, but this is entirely a secondary matter compared to the principal criteria. The possession of a sound professional philosophy is not dependent upon a man's particular relationship to the organization of society, although such a philosophy may be acquired more readily under some circumstances than under others. During apprenticeship nearly all professional men are employees, and many will always thus remain. The question to be asked about any individual is not what is the particular contractual or other relationship which he maintains with the society of which he is a part and which supports him in his work, but what is the intellectual relationship which he bears to all those to whom he renders his special knowledge available. Many, of course, never attain professional status for the simple reason that their necessary superior knowledge of a field never exists or, if it exists, never becomes recognized. When the knowledge and the recognition of it are present in fact, the essential independence of the individual is assured, provided he maintains his philosophy and does not sacrifice it to a mere struggle for the maximum possible income.

There is a tendency to delimit the professions artificially to certain arbitrary fields of knowledge. This has sometimes resulted in an absurd attempt to create separate professional groups where the need therefor is nonexistent. True professionalism transcends arbitrary rulings as to the type of knowledge possessed. Membership in a recognized professional society, while usually laudable and useful, is no more necessary than the prefixing of titles. The ancient professions of the ministry, medicine, and the law became recognized early because the special knowledge each required touched an elementary need of society. As life has grown more complex, the fields of special knowledge have multiplied and the opportunity of the professional life has broadened. To acquire a professional philosophy in isolation is much harder than to acquire it in the midst of a professional group having old and fine traditions, yet there is no absolute bar to professional status in any corner of civilization where special knowledge is needed. The engineer, as a member of one of the youngest professions, has several hurdles to surmount as compared to the medical man or the lawyer. The engineer's period of indoctrination is shorter; there is no ceremony of admission to the bar and no oath of Hippocrates to remind him of the great traditions. His profession is not tightly organized. He is likely to be a part of a business organization. Yet in every field, there are hurdles to be surmounted and temptations to lure the most able. The engineer, the scientist, the architect — every man who bases his

thoughts upon a long background of special study and experience and who hence is in a position to know truths of which the world has need — becomes a professional man when that knowledge is recognized and when he joins the tenuous and far-flung association of those whose mission it is to minister to their fellow men.

This is the professional man. Today he operates in a changed and changing world — a world in which protection, interdependence, and intercommunication have introduced challenging problems for all civilization; a world in which the professional man needs to revise his outlook and adapt his methods if he is to maintain his traditional position of respected adviser; a world in which he has an unprecedented opportunity of ministrations of the highest order. There is, however, much for him to learn.

It is quite clear, for example, that the professional man must learn to operate more effectively as a part of a complex organization while still retaining his professional status. For instance, it is apparent that medical care, including dentistry, can be made available on an adequate plane to an entire population only if traditional procedures are somewhat altered and adapted. This is partially the result of the inherent increased cost of modern medical methods, but more the result of an advanced standard of what is considered adequate. The time and effort of men trained at great expense to society cannot be wasted on anything which can be safely delegated under supervision to those of lesser training, if the objective of universal medical care is to be attained. There are none more alive to this situation than some medical men, but (*Continued on page 416*)



"... Interdependence." Construction in progress on Chicago's subway tunnel

# Men and Measure

## *Fundamental Human Problems Remain Unaltered by Technical Transformation—In Them the Thoughtful Man Will Find Creative Opportunity*

BY SIR HAROLD HARTLEY

THE great changes that have occurred in industry during this century, apart from new inventions and discoveries, are largely in the direction of transforming traditional methods that depended on the personal skill of the operator into scientifically controlled processes in which measurement has largely taken the place of craftsmanship. Many years ago Lord Kelvin said that in order to understand anything one must measure it. Industry on the whole was rather slow to learn the lesson, but today there is a new standard of certainty, based on scientific measurement, which has invaded every branch of the industrial and engineering field. To take a few examples from the railways, my own field: The comfortable riding of rail coaches, the sources of noise, the movement of a wheel along the rail, the vertical movements of the rails when under load, and the resistance of materials to wear — these are no longer left to personal impressions, which are so liable to error and leave no record for subsequent comparison. Measurement provides a new basis for progress.

"The sovereignty of man lieth hid in knowledge." There is every reason to be proud of the achievements of this country in the application of science to the needs of the world today. Americans were the first to realize for their own vast homogeneous internal market the immense potentialities of mechanized production — production which was made possible by scientific control and which has done so much in so many ways to diversify the pattern of life for this generation. But in our technical enthusiasm we must not forget that the human problems of management present much more

difficulty than the choosing and working of inanimate material. With the infinite varieties of human temperament there is no figure of merit to guide one's choice. In judgment of a man there are so many qualities to be weighed in which one must be dependent on one's own awareness — qualities such as decision, initiative, leadership, generosity, human understanding, sense of values, coöperation, eagerness to learn, and courage to meet a situation that does not admit of compromise.

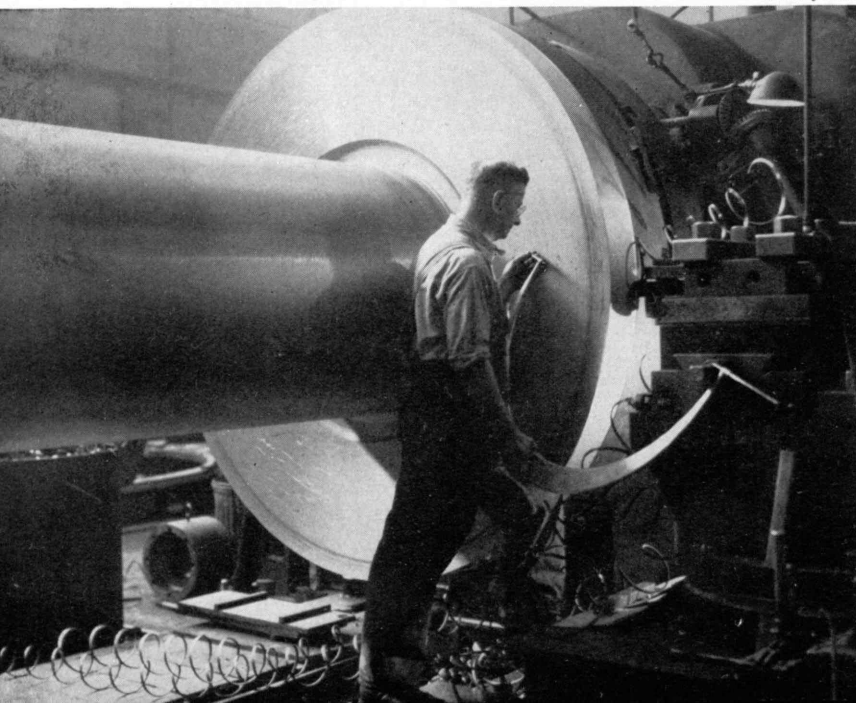
Then there are the wider human problems of industry. The basis of mass production was the saving of human effort by scientific planning of the factory. In the War the necessity for getting the utmost output of munitions led us to study means of selecting individuals for their tasks by tests and to study the effects of fatigue on production. The extension of these studies later over the whole field of industrial psychology soon showed that there were other factors at least as significant as the effects of changes in physical conditions. As Miss May Smith put it: "Repetitive work is a thread of the total pattern, but is not the total pattern."

Since then the most comprehensive and sustained studies of the effect of human environment on production have been made in this country by the Western Electric Company in the Hawthorne experiment, which showed that the human element may still play a pre-dominating part in modern production. The collective life of the factory, the emotional response of the individual, the human understanding of the supervisors — these, as much as scientific planning, may influence efficiency and output. In the service of a great modern corporation, whether the corporation was formed by the amalgamation of smaller units or has grown by natural expansion, one quickly finds that the human problems of management become increasingly important with size. I need not dwell on the factors that have produced these great organizations: economy of large-scale production, elimination of uneconomic competition, pooling of technical resources, advantage of diversity of output, and, above all, the need for the specialization of function.

It is often said that these great corporations are incompatible with individual initiative and enterprise, and I know that this feeling sometimes deters young men from entering them. If such a condition were true, it would imply that corporations contain within themselves the seeds of inevitable decay. The rapid growth of corporations represents in our social organization a new factor

Measurement

Westinghouse



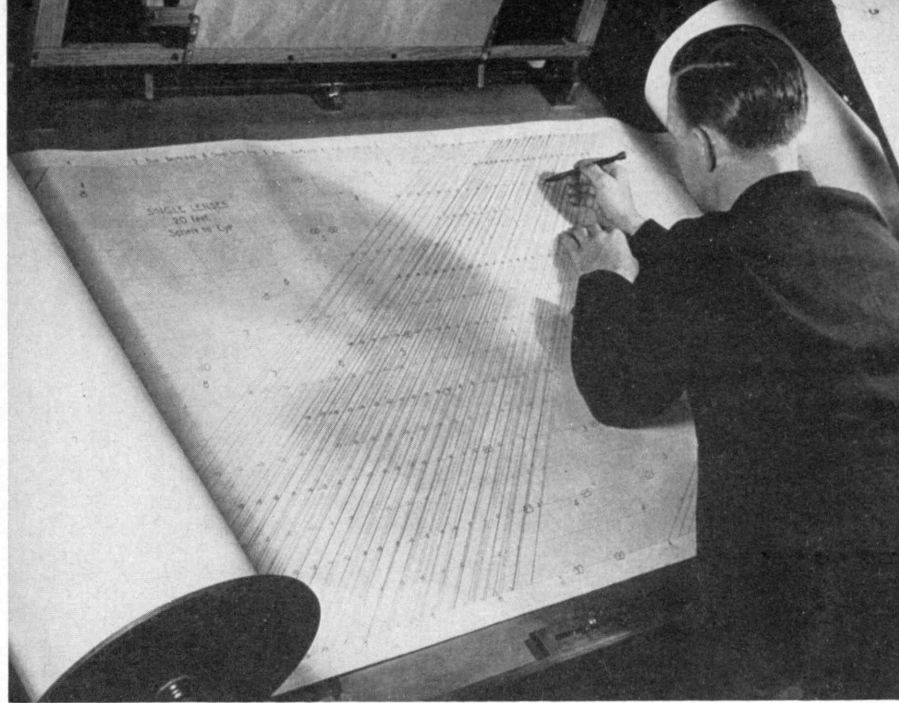
which may be comparable in its effects to the industrial revolution, and so any danger of their inability to utilize human effort to the best advantage — and there is a danger — becomes one of the most urgent problems of their existence. How can the danger be avoided?

Size has its obvious advantages, and the questions are often asked: Is there any limit to the corporation? What is the optimum size? There can be no simple answer when so many considerations must enter into it, but of these considerations one of the most significant is the limit of the possibility of personal influence and contact. It is the human factor in another aspect. When an organization becomes too large for personal leadership, it is in danger of losing its character and vitality, of becoming mechanical, with all the loss of efficiency that that implies in a human agency.

The very word "organization" implies a structure or constitution the object of which should be to unite order and freedom — order in the distribution and coördination of the functions of the separate parts, and freedom for the individuals within their spheres of action. The basis of the structure is the relation of all the specialized units that go to make up the whole. Now the French physiologist, Carrel, in "*L'Homme, cet inconnu*," while recognizing the necessity for specialists, insists on the danger to society of their ignorance outside their limited spheres of knowledge. The remedy is a synthesis, and this remedy is itself the function of a great industrial undertaking in securing the coöperation of a team of specialists. A large organization is an intricate human machine whose smooth running depends on the ability of each of its component groups to mesh in, and engage intelligently in its particular task, performing it in proper coördination with the rest.

Today any tendency toward self-sufficiency must yield to a realization of the help that comes from outside and from mutual assistance, without which efficiency is impossible. But I would go farther and stress the importance of knowing generally the trends in other industries and the necessity for a knowledge of current events in the world as a background for any particular business. In the closely integrated society of today the effects of a new factor are often felt in unexpected places. Hence it is of such great value to have reports like that of the National Resources Committee which gives so comprehensive a picture of the human and physical resources of the United States and of the large-scale changes that are taking place — changes which have a special significance in planning the future of any big enterprise. Viewed against a wider background, the problems of any undertaking will be seen in truer perspective.

To come back to the criticism that individual initiative disappears with increasing size: This sounds plausible since the larger enterprise implies a greater degree of specialization, limiting the scope of the individual and making his occupation subordinate to the general pattern of the undertaking. But, on the other hand, it is admitted that with the growing complexity of industry specialists are necessary, and only the large enterprise can give them scope and opportunity. Yet can it be assumed that their occupation does not make full



Control

American Optical Company

demands on their ability? The misunderstanding arises partly, I think, from an underestimate of the nature of the specialized tasks and partly from the idea that a large organization is necessarily rigid and mechanical, with no encouragement for initiative. But this is, in fact, far from being a true picture of modern industry, where the impact of research and development, where changes in fashion and changes in demand are creating a continually changing set of problems for each department. Dynamic, not static, conditions are dealt with, and every enterprise must have vitality to keep its place in the modern world of competition where unforeseen substitutes and rivals are constantly appearing. If initiative is lacking, what chance is there of success? In a healthy organization there must be a steady flow of ideas not only outward from the center but inward from each section of those who are in daily touch with the details of the organization's business. And what manifestation of personal initiative is more significant than a new idea?

We are living in a power age. Our modern civilization has been made possible by the substitution of mechanical power for human labor, and many of the most remarkable achievements of the engineer lie in this field. What is the motive power of the intricate human machinery of a great corporation? What is the individual drive on all the human units it contains? These are problems for the human engineering that is so urgently needed today to make secure the great social structures of these modern corporations and to safeguard their effectiveness.

To many, I believe to most of us, the greatest satisfaction comes from taking part in some creative task, in seeing new things grow by our efforts. This, however, applies directly to so few that it is no answer to the general question. What are the motives on which we must rely? Times have changed since the days of great expansion in the 19th Century when demand was always outstripping production and when there was ample scope for the small productive units operated under private ownership, in which self-interest was the main driving force. That period of rapid growth has ceased for a time at least, and in spite (*Continued on page 418*)



# National Defense—Its Technology

## A Reading List Inspired by the Conference at M.I.T., June 5

COMPILED BY MARGARET PAIGE HAZEN

THIS list of references on national defense problems includes material on industrial mobilization; views of some contemporary writers, military and civilian; studies in the economics of raw materials and supplies as they affect world peace; and a glance at technical aspects of the problem. Out of the extensive literature on this many-sided subject, it has been possible to select only a few titles chosen to give the general reader a cross section of current opinion and information.

### I. PROS AND CONS OF POLICY

BORCHARD, E. M., and W. P. LAGE. *Neutrality for the United States*. New Haven: Yale University Press, 1937.

"A brief for the *status quo* not always impartial in its presentation of materials, but challenging because the authors present considerations and arguments that cannot be ignored if an intelligible policy to keep us out of world war is to be forged in our time." — Phillips Bradley in *Annals of the American Academy* and the *Survey Graphic*.

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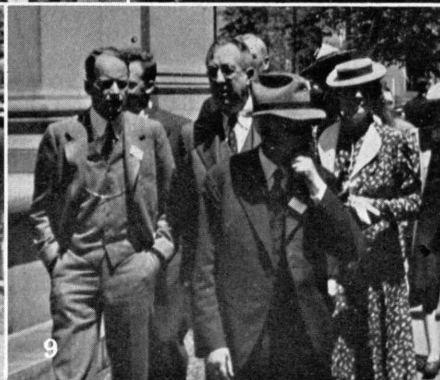
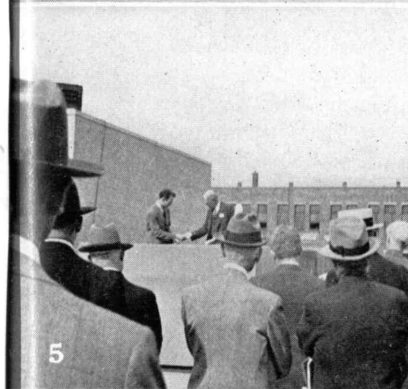
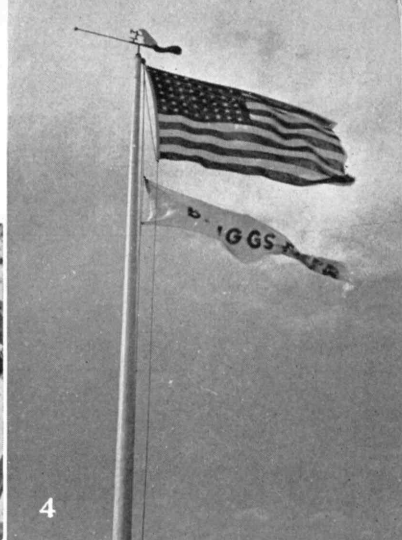
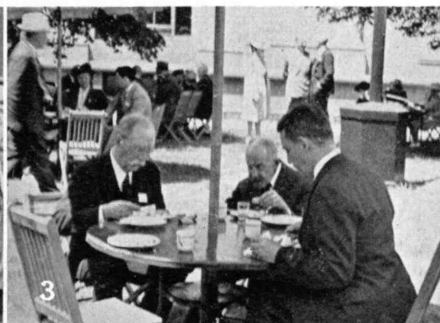
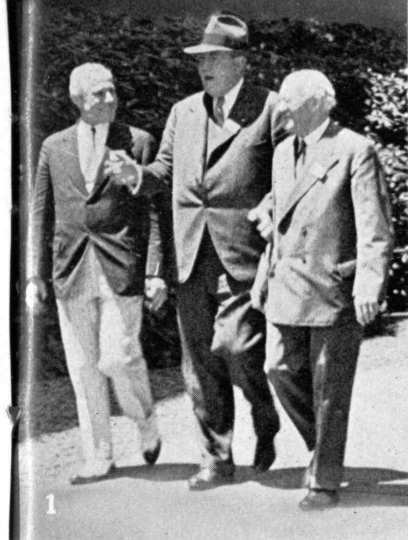
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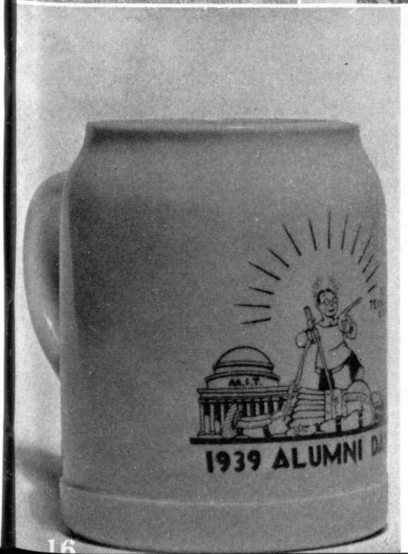
"In effect a series of remarkably comprehensive and detailed monographs on the technology, economics, political history, financial control and post-war developments of six basic non-ferrous metals: nickel, aluminum, tin, copper, lead and zinc." — H. W. Ward in *New Republic*.  
(Concluded on page 414)

# Alumni Day 1939



Photos by Frederick B. Wolf, '28, and M.I.T. Photo Service

HERE and on pages following — records of the memorable Alumni Day 1939 which was marked by the eloquence of Franklin W. Hobbs, '89, Charles P. Fiske, '14, and Andrew P. Rebori, '39, at senior class day exercises at which Professor Emeritus Dugald C. Jackson was presented with honorary membership in the Alumni Association; the dedication of the Briggs Field House and the Dard Hunter Paper Museum; exhibitions and a stimulating conference upon the technology of national defense; and a jovial concluding dinner. On this page: 1. President Compton, Bradley Dewey, '09, and Sir Harold Hartley. 2. Arthur C. Dorrance, '14, with Richard H. Ranger, '11. 3. George M. Tompson, '73 Class Secretary (left), and Henry P. Cogswell, '73, lunch in Du Pont Court. 4. Masthead of the Briggs Field House. 5. Dr. John A. Rockwell, '96, hands over to M.I.T.A.A. President Thomas F. Creamer, '40, the key to the new field house. 6. Alumni Day Speaker Harold R. Stark, rear admiral, U.S.N., flanked by Alumni Association President H. B. Richmond, '14 (left), and Alumni Day Chairman A. Warren Norton, '21 (right). 7. Alumni pause in the Main Lobby to view the Army's exhibits. 8. Charles E. Smith, '00, and Godfrey Lowell Cabot, '81. 9. Dean Edward L. Moreland, '07, escorts Sidney Withington, Harvard '06 (center), and Stephen Bowen, '91 (right), to the luncheon. 10. Jerome C. Hunsaker, '12, and Gerard Swope, '95. 11. Redfield Proctor, '02, with Raymond Stevens, '17. 12. Major General James A. Woodruff chats in the Main Court with Lieutenant Colonel Charles Thomas-Stahle, '22, and Mrs. Thomas-Stahle. 13. The '96 table about to disperse: H. C. Lythgoe, Mrs. Lythgoe, Mrs. E. H. Laws, J. Lloyd Wayne, 3d (standing), Charles W. Tucker, Mrs. Tucker, Mrs. Robert A. Davis. 14. A portion of the head table. 15. Willard H. Roots, '90, inspects a submarine door. 16. The technology of defense as conceived by L. Franklin Van Zee, '18. 17. Quiet in Du Pont Court.





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# THE TECHNOLOGY OF NATIONAL

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## National Defense and the Engineer

BY LOUIS A. JOHNSON

WARFARE is, and always has been, closely allied with the genius of the engineer. Six hundred years before the Christian Era, the Persian rulers were depending on the skill of their military engineers to fortify their cities and to improve their roads. The very existence of Rome depended on the great walls built by her military engineers. The great highways laid out by the military engineers of the Caesars held the far-flung Roman Empire together. The strength of the battlements of Constantinople, planned and constructed by military engineers, for many centuries held the Mohammedans in check.

In our own Colonial history it was the army engineer who surveyed the great wilderness of the West, opened the routes of travel, and constructed the stockades and the blockhouses for the protection of our pioneer settlers. The army engineer was the genius who conceived plans for the utilization of our railroads in the movement and supply of troops. In the War Between the States, he revolutionized the speed and the conception of logistics in warfare.

In the World War the Army found the engineer indispensable in every phase of our military effort. The manufacture of our rifles, our bayonets, and our field pieces; the lines of communication that our road builders extended to our cantonments and to our training areas; the navigation and storage facilities that our contractors constructed at the ports of embarkation; the hospitals,

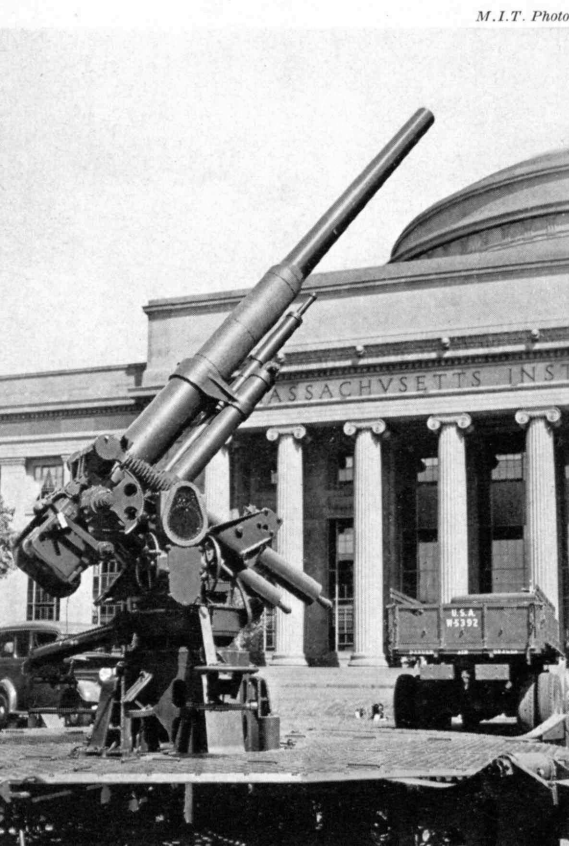
the repair shops, the refrigeration units, the map-reproduction plants — for the success of all of these military ventures, the Army owed much to the man of engineering training and experience. In France engineers worked behind the fighting lines, in the lines, and even in front of the lines. In no man's land, in advance of the doughboys, engineers laid down barbed-wire en-

tanglements for our infantry's protection on the defense and cut those of the enemy to facilitate the jump-off of our first waves when taking up the offense. When the engineers found the infantry hard pressed, they readily dropped their shovels and their axes, loaded their rifles, fixed their bayonets, and went forward with the attack.

As illustrative of the fighting qualities of the engineer, let me recall to you the heroic exploit of the young Captain Charles D. Harris of the Sixth Engineers, third division. He was in command of a company of engineers working close to the front lines when the infantry was repulsed and began to withdraw from the lines. Immediately he ordered his own company forward. He rallied the retiring doughboys. He formed them for renewed attack. With three of his men in advance of the remainder of the company, he fearlessly attacked an enemy machine gun, captured three prisoners and two guns. The latter he turned on the enemy and inflicted severe casualties among them. While still operating one of the guns in an exposed position, he was mortally wounded. His exploit won for him the posthumous award of a Distinguished Service Cross. His achievement stands out as a memorable example of the fighting qualities of the army engineer.

With the arrival of the Machine Age on the battlefield, the importance of the engineer has greatly increased. His discoveries, his inventions, and the mechanical processes that he has developed are responsible for the powerful weapons and the materials of war that dominate battle today. The automotive engineer, who has revolutionized military transportation; the highway engineer, who has perfected the roads over which our heavy motors and combat cars must travel; the technological expert, who has designed the models of our guns and our ammunition; the physical and chemical engineers, whose laboratory experiments have made possible our military development; the industrial engineer in the factory, who has given us mass production of munitions — all of them count heavily in preparedness.

Consider, for example, the antiaircraft director, developed by ordnance engineers for the use of the antiaircraft troops of our Coast Artillery. Here is a machine which solves a problem in four dimensions automatically. By the mechanical use of a few dials, this apparatus corrects for range, direction, height, and time of flight and enables our gunners to direct the fire of our antiaircraft guns. Here is a complex, delicate piece of apparatus that requires the highest technical skill of the engineering profession in its design and manufacture and even greater ingenuity for its production in sufficient quantities for effective use. (Continued on page 420)





### The Navy and Industry

BY HAROLD R. STARK

THE democratic theoretical ideal of national defense envisages a small skeletonized force which can be expanded at need. This nucleus would, under our ideal condition, devote itself to the development of its material and technique, to the end that the wartime forces might be placed in service quickly and with adequate equipment. Unfortunately the reality falls far short of this ideal, and for the Navy the ideal is entirely out of the question. It takes time to train the sort of technician who mans the modern navy and it takes months — years — to build a modern ship. Consequently the combatant ships that we have when war breaks out are the only combatant ships that we will have during the first year or years of the war. We must abandon the democratic ideal of preparedness in so far as our Navy is concerned.

In times of comparative tranquillity we may feel reasonably safe with a relatively small navy. When the balances of the world are disturbed and there is even a remote possibility of conflict with any other nation or nations, the unqualified duty of government is to strengthen the navy as may be necessary to meet those possible conditions, remote though they may be. The world turmoil of today is such that war is not only a possibility but must be considered a probability. I am not speaking as an alarmist, and I do not predict that we will be involved in any major war. Nevertheless, the possibilities of a great conflagration exist, and there is nothing for us to do but be ready to defend our interests and to maintain our national integrity should another Armageddon occur.

The modern man-of-war is an extremely complex engine. The elaborate systems necessary for the control of its weapons and its movements demand the utmost of designer and manufacturer. The equipment for directing gunfire includes the most intricate electrical and electro-mechanical devices; the military requirements of speed and cruising radius continually press the marine engineering designers for more powerful, more compact, and more economical installations; the ship itself and all the equipment that goes into the ship make demands, in the aggregate, on virtually every industry. We might therefore think of today's navy as the scientific navy.

By definition technology is a term for "industrial science," and March 9, 1862, might be designated as the point of origin for modern naval technology. On that day the *Monitor* and *Merrimac* hammered each other virtually at cutlass range and demonstrated the inadequacy of the guns of the period to penetrate the armor protection available. The *Monitor*, with five-inch side armor and eight-inch turret armor, easily withstood the

seven-inch rifled guns and nine-inch smooth bores with which the *Merrimac* — or *Virginia*, to give her Confederate name — had pulverized the Union's wooden frigates the day before. Nor could the *Monitor's* eleven-inch Dahlgren guns gain a decision against the four-inch bar iron which sheathed the *Merrimac*.

On that day in 1862 there began an interminable seesaw struggle between the weapon and protection. Time after time, human ingenuity produced a weapon that threatened extinction to the world's most powerful ships, and time after time the development of protective measures finally restored or reversed the balance. Skipping quickly the dark chapter of naval stagnation following the Civil War, we see the first signs of the birth of the scientific navy in the latter part of the 19th Century. Some strange craft were evolved during that period of transition: steam-driven steel ships, still carrying the masts and spars of a former era "just in case"; monitors built to meet the ill-advised requirements of a mistaken national policy which demanded naval pickets in front of American ports; and many other hybrid rigs resulting from the confusion of ideas — both technical and strategic — natural to a period in which the world was undergoing revolutionary changes of every sort. Probably the old White Squadron, or "Squadron of Evolution," stands out in memory as the first important evidence of the growth of a technological navy. These little ships were followed quickly by improved types, and by 1898 we had developed some very respectable fighting ships.

It was during the '80's and '90's that the Navy may be said to have first contributed in appreciable measure to the general progress of technology. Our demands for steel — for protection — necessitated costly research, and as an inducement to private firms to engage in it the Navy contributed

(Cont. on p. 422)

M.I.T. Photo

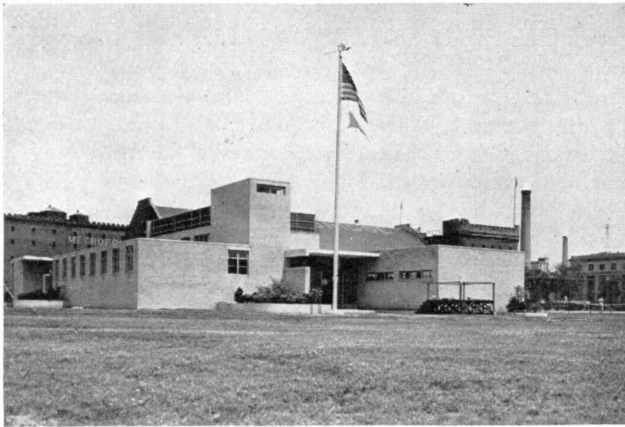


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# DEDICATIONS CONCRETE AND

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## The Frank Harrison Briggs Field House



M.I.T. Photo

FIRST project in the Alumni Association's sponsorship of development of athletic and recreational facilities for M.I.T. students, the Frank Harrison Briggs Field House was dedicated at simple and impressive ceremonies on Alumni Day.

John A. Rockwell, '96, chairman of the Alumni Advisory Council on Athletics, receiving the key of the new building from H. B. Richmond, '14, President of the Association, traced the Institute's gradual development of athletic policy, which reached rationalization in the establishment of the advisory council in 1898, under the presidency of Major Briggs, '81. "Possessed of unusual business sense and being an advocate of pure amateur sport, he became a natural leader in the group who labored at his side during these constructive years. His indomitable spirit and high ideals build well the foundations on which our present system rests," said Dr. Rockwell of the major, in entrusting to Thomas F. Creamer, '40, President of the undergraduate athletic association, the key which will represent student stewardship of the latest addition to Institute facilities.

The new field house provides general locker-room accommodations for 432 men, as well as quarters for visiting teams, for coaches, and for officials, with a rubbing room and shower and toilet facilities. Direct and sincere in its expression of the purpose for which it is built, the building was designed by Professors Lawrence B. Anderson, '30, and Herbert L. Beckwith, '26, of the Institute's School of Architecture. From the carefully thought out arrangement of rooms and services to the canvas-parapeted sun deck on an elevated portion of the roof, the plan is thrifty in its utilization of space and ingenious in its anticipation of possible needs. With the cinder track recently completed near by, the field house forms a focal point for the outdoor athletic center west of Massachusetts Avenue.

## The Dard Hunter Paper Museum



M.I.T. Photo

THE Dard Hunter Paper Museum, result of Dr. Hunter's 30-odd years of study of paper and paper-making as objects of cultural research, was dedicated on Alumni Day as a unique addition to the Institute's developing museum of science and industry. The inauguration of the paper museum was marked by a friendly informality thoroughly in keeping with the history of the collection itself, which is the expression of Dr. Hunter's complete devotion to the field, of many searches through Europe and Asia and into the South Sea Islands, of the writing and printing of definitive books on the subject, of patient study of the methods and materials of native craftsmen in far places, and of sympathetic discernment of the significance of paper as a human and social influence as well as a thing of beauty. Dr. Hunter, who is personally in charge of the new museum, greeted the visitors who thronged the room to admire colorful displays of rare papers, examples of materials and apparatus, and ingenious models illustrating various versions of this ancient art.

The exhibits were installed under Dr. Hunter's supervision and with the aid of his son. They are wide in historical sweep and multifarious in their appeals to interest. Beginning with the invention of paper in China about 105 and the first known printing, which was done in Japanese in 770, the collection contains molds and appliances of the kind used in making paper from the earliest years of the art to the present. First European textbooks on papermaking and the letters of John Gamble relating to his original patent of the Fourdrinier papermaking machine suggest the technology of the art. And throughout the collection, in addition to the warmth of history that marks it, is the glow of color — in Sixth Century Chinese papers, in umbrella papers from southern Burma, in watermarks ranging from the beginning of the art in 1270 to the present.

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# ABSTRACT ON ALUMNI DAY

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## The Institute and the Future

BY KARL T. COMPTON

**T**HIS declaration of Technology's view of the future formed the peroration of the address by Dr. Compton which was a feature of the Alumni Day dinner, June 5.

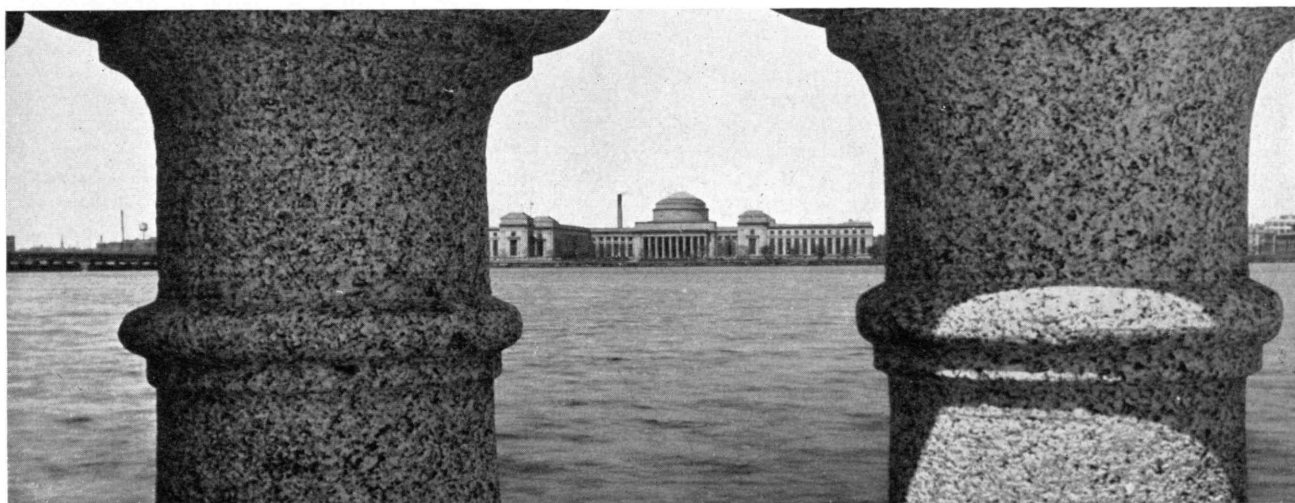
**H**OWEVER interesting things may be in retrospect, and however pleasant and inspiring may be our renewal of old associations at our alumni reunion, the important business of life is ahead of us, not behind us. The past is important, for it is the foundation on which we build the future, and its experiences show the directions in which our future efforts should be guided if we can interpret these experiences aright. The stones of that foundation are the laboratories, the endowment, the alumni, students, and staff. The cement which binds these stones together into a solid foundation is composed of tradition, experience, and morale. What type of structure should we strive to build on this foundation?

Our original directive, paraphrased above the entrance lobby of the new William Barton Rogers Building, was stated in our charter in 1861, which incorporated the Massachusetts Institute of Technology "for the purpose of instituting and maintaining a society of arts, a museum of arts, and a school of industrial science, and aiding generally by suitable means the advancement, development and practical applications of science in connection with arts, agriculture, manufactures and commerce." This objective has stood the test of time and is perhaps even more important now than ever before. I say this with confidence, despite the panicky thoughts of some who have sought during the last nine years to see in science the scapegoat for our recent economic troubles and who have sought salvation

in legislation contrived by social planners. Granting that there is a real value in social planning if wisely conceived and efficiently administered, why do I still believe that our most valuable contribution to humanity can come through "advancement, development and practical applications of science" with all the wisdom, energy, and resources which we can marshal for the task?

Consider, first, the long-range lesson of history. Just before the Machine Age, social planners, including some of the ablest minds of all time, were devising resettlement projects and model industrial communities in which an essential feature was the employment of all children above the age of four. This was the best solution that era could offer for the desperate struggle of the masses of people for the bare necessities of life. Only by efficient use of child labor could children be afforded and could families hope to escape the privations of starvation and hopeless existence. The proposed solution — systematic employment of children in factories — was viewed not as exploitation of child labor but as a great social improvement.

Since that time science and engineering have so increased productive power that it has been possible for enlightened public leaders to inaugurate a great program of social security, including abolition of child labor, adoption of universal education, moderate hours of labor, pensions, insurance, and unemployment relief on a huge scale. These are superimposed on an enormously improved general standard of comfort, health, and interest in living. Such achievements of science dwarf into insignificance the recent social and economic dislocations, and they have provided (*Continued on page 425*)



Bartlett



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# THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

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## *Twenty-Five Years Later . . .*

GRADUATES of the Institute's Department of Business and Engineering Administration, familiarly known by its catalogue designation as Course XV, found Alumni Day enriched by celebration of the 25th anniversary of the establishment of the Course.

They came back — these Course XV men — some 300 strong, to hear and to be heard at a luncheon, a dinner, a breakfast, and various conferences in which "industry's widening responsibilities" were thoroughly discussed. Industrial leaders who participated included Lamot du Pont, '01, President of E. I. du Pont de Nemours and Company; Roy A. Young, President of the Federal Reserve Bank of Boston; Francis J. Chesterman, '05, Vice-President of the Bell Telephone Company of Pennsylvania; and Edmund C. Mayo, President of the Gorham Manufacturing Company. Prominent among their memories of this anniversary are the informal remarks of Davis R. Dewey, Emeritus Professor of Political Economy. Dr. Dewey's address — or, rather, familiar chat — follows:

This is a happy day for an elderly man who looks back with affection to years of friendship which you so kindly made possible. Friendship is a great asset in human life, and, if the older men will pardon the remark, friendship with younger men is a greater asset. It helps to irrigate the hardening influences of age with fresh currents of inspiration. I have never thought of myself as a teacher but rather as a friend who could learn from you as much as you could learn from me.

I note on the program that we are celebrating Course XV — Yesterday, Today, and the Future. You have already heard about the past and the present, and apparently I am expected to say something about the hereafter. That is a delicate subject for a man of my age to discuss. However, you and the absent graduates of Course XV are the Future. It lies in your hands, and I am sure you are going to give a good account of it.

It is nine years since I was relieved of responsibility for directing the management of the Course. Fortunately we had on our staff a younger man who was far better equipped than I for dealing with problems of industrial production, and I should like to pay tribute to the singlehearted interest and competency of Professor Schell, ['12]. Equally fortunate for me was the privilege of continuing my work in the field of economics, so that as a bystander I watched the further development of the Course with genuine admiration.

As I shall probably have no opportunity to meet many of you in the future, may I, in the intimacy of this family group, make a few confessions, in the hope that if you ever waste any of your moments in thinking of me, you may know something of my past life?

First, I was a poor teacher; and I must apologize for the economic diet with which I attempted to feed you. Mistakenly I prescribed a strong regimen of foods rich in vitamins which I thought might invigorate your productive efforts. This I now confess was a sad error. I should have prescribed a thinner diet in which alphabet soups played a large share. By proper training you would be better fitted to breathe the anemic

atmosphere which now envelops your lives. This may seem to you a somewhat flippant confession and may make a wrong impression. I am not an economic royalist, and so I proceed to my second confession.

In reviewing my life I think of myself as one always interested in reforms. In college as an undergraduate I followed a Classical course. My interest, however, was in economic matters. Every student was called upon to deliver an oration before the whole college. In my sophomore year (this was in the Seventies) I orated on "Greenbacks," and, in my junior year, on "Ferdinand Lassalle, the German socialist." In each of these new movements — greenbackism and socialism — I found something to commend. The sparkling air of Vermont had already begun to bear fruit. Our formal study of economics did not come until the senior year, so you can see I was well prepared to speak at earlier dates on the problems of money and German socialism.

Enough of these erratic manifestations of my early life. In the Nineties an editorial in the *Boston Herald* termed me a socialist. Before some of you were born I advocated many of the objectives in which the present administration is interested. My complaint is not with the objectives but with the methods of gaining them. . . .

Economics is a growing science. As in physics and chemistry, new laws are being discovered, and a teacher is not to blame for not teaching a law before it has been discovered. In economics a new law has been discovered. This is the law of accelerated velocity of spending. In simple English this means that the more you spend, the more you can spend. This is a wonderful law and bids fair to rank with Newton's law of gravitation. Of course, we have always known that spending brought pleasure just as mankind, long before Newton lived, knew that if you dropped something it would fall to the ground instead of rising into the air. Newton gave a solution to his problem, and physical science has benefited by his solution. So economic science has been given a more profound explanation than that mere pleasure is to be derived from spending. It means, we are told, recovery. Recovery will intensify pleasure and bring unmeasured happiness to a weary world.

The full significance of this law has as yet been but dimly apprehended. Spending should not be confined to governments, but should be employed by business and by individuals. There is not time to present a complete exposition of the plan to which I have given my ample leisure; a simple illustration will suffice. Credit institutions are increasing the length of their loans, and interest rates are falling. It is not unreasonable to ask that credit institutions make 50-year loans, nor is it chimerical to expect that interest rates will fall to one per cent. A student arrives here with a parental allowance of \$1,500 per annum. Education is a praiseworthy ambition, but the student wishes to assist in the larger field of economic recovery. He borrows \$10,000 on which the annual interest is \$100. He puts \$5,000 in pledge in a bank to pay the interest for 50 years. He thus has \$5,000 left to devote to spending and recovery. How much richer his life will be with \$1,250 extra to spend during each of his four years at the Institute, and how much brisker will trade be in Cambridge and Boston. And if business houses follow the same policy, the results are beyond imagination.

Some of you are probably asking what will happen at the end of 50 years. What a foolish question! Fifty years is a long time, and much can happen in the meantime. At the end of 50



Underwood and Underwood

At the New York World's Fair, the National Cash Register Building displays official attendance figures . . .

years the former student will be 70 years old and entitled to an old-age pension with which he can finance another loan. And it may be suggested that the application of 77B of the Bankruptcy Act will provide an easy solution. I commend this plan to the teaching ability of Professor Armstrong, and my fondest hope is that the Dewey Plan will be more popular than the Townsend Plan. You will observe that the Dewey Plan provides economic relaxation for the young as well as for the old, while the Townsend Plan provides ease only for those who have passed the meridian of life. This is unfair, for as long as youth does the fighting, it should share in the humane policies offered by government.

I am not here, however, to deliver an economic lecture. Our theme is Course XV. In regard to Yesterday, I should like to make an explanation. Because of my early association with this Course, some think that I was its founder. This is an error. Its establishment was planned by a committee of Alumni. I knew nothing of the creation or deliberations of that committee until several months after its appointment. The credit for the establishment of this Course lies with that committee, several members of which are present with us.

That committee even went so far as to lay out a tentative tabular view of studies; and when the Corporation and Faculty endorsed the findings of the committee and President MacLaurin did me the honor of asking me to take charge of the Course, I endeavored to follow the suggested studies to the last item. In my opinion, this report of the alumni committee ranks high in the history of educational annals; and it is needless to say that the responsibility which was conferred upon me filled the warmest ambition of my life.

In only one essential item has the original schedule been departed from. The committee included the study of psychology in the original program. This schedule was followed for one or two years; but for reasons which I shall not take the time to explain, this subject as an undergraduate requirement was abandoned. I sometimes think that a study of psychology should be reintroduced. However, in view of current philosophy, both in this country and in Europe, the course should deal with psychological processes different from those which we considered in our early experiment. It should deal with abnormal psychology instead of normal psychology. Perhaps



. . . and houses Technology's exhibit, whose stroboscopically lighted water jets here fascinate youthful observers

my conviction is prejudiced, for I have just finished reading "*Mein Kampf*"; but nearer home there is abundant evidence of the utter disregard of the motivating human forces which have raised societies of mankind to their present standards of living. Again, I must apologize; for I appear to be on the verge of delivering a lecture on psychology, and I know less of psychology than I do of economics.

May I conclude my remarks by a few words of more serious content. Most of you are engaged in industrial pursuits and are facing difficult problems. For a considerable period of time our economy has been changing from an individual economy to a collective economy, and this change is now proceeding at a more rapid pace than ever before. There is much to be said in favor of collective economy. In many ways it ensures security and stability. However, it must be remembered that progress has been made by risk taking. The Pilgrim Fathers who came to our shores took risks; the farmers who pioneered into the West took risks; inventors who lived lives of self-denial took risks; and owners of capital savings took risks in new enterprises. Risks involve losses as well as gains; but if I read history aright, the gains outweigh the losses.

In overemphasizing security, we may endanger the spirit of risk taking; if so, we may clog progress. The problem you have to face is the reconciliation of measures of security without unduly suppressing the spirit of risk taking. This, I believe, is the test to be applied to every measure of public policy.

### Appointed

ANTOINE M. GAUDIN, internationally recognized authority on process metallurgy, has been appointed Richards professor of mineral dressing at the Institute and will join the staff in the autumn. Professor Gaudin comes to Technology from the Montana School of Mines at Butte, where he has been research professor of mineral dressing and particularly active in research on flotation, on which he is an outstanding authority.

In announcing the appointment, Edward L. Moreland, '07, Dean of Engineering, drew attention to the growing importance of flotation in process metallurgy.

This method, which involves the recovery of finely divided mineral particles by flotation, was originally associated almost entirely with the concentration of nonferrous metal ores. Recent developments, however, have indicated many applications in industry and in ceramics, chemistry, and chemical engineering, as well as in metallurgy.

Professor Gaudin comes from a distinguished French family. His father, Paul A. Gaudin, was an engineer, and it was while his parents were living in Smyrna, Turkey, in 1900 that Professor Gaudin was born. The elder Gaudin, then general manager of a French-owned railroad, later was commissioned by the sultan, Abdul-Hamid, to construct and operate a railroad from Haifa to Mecca. Following the Young Turks' revolution in 1908, Professor Gaudin's parents returned to France. The son studied at the *lycées* in Versailles and Toulon, and in 1917 completed the requirements for his bachelor's degree.

During the World War his father was sent to the United States as a member of the French War Mission. The younger Gaudin joined him in 1917 and entered Columbia University, where, four years later, he completed a six-year course leading to the degree of engineer of mines. In 1918 he enlisted in the United States Army, serving until shortly after the Armistice.

In 1924 he was invited to become a lecturer in mining at Columbia University and remained until 1926. Rapid developments in the field of mineral dressing led him in 1926 to accept an appointment as associate professor of metallurgical research at the University of Utah. Three years later he was appointed to the staff of the Montana School of Mines, a position that he has held for the past ten years. Professor Gaudin's professional investigations and publications have dealt largely with methods of flotation of ores and the microscopy of opaque minerals. He has, however, made important contributions to the knowledge of crushing, grinding, screening, and classification of ores, to the synthesis of sulphide minerals, as well as to the optics of mineralogy.

## Graduation

A CLEAR June day, blessed by a refreshing breeze from the sea, added to the pleasures of the Institute's 72d graduation exercises on June 6, at which the commencement address was given by Sir Harold Hartley, Vice-President of the London Midland and Scottish Railway Company (see page 400). President Compton awarded 638 degrees to 614 candidates, 24 of whom, having completed five-year courses, received both bachelor's and master's degrees.

The total number of bachelor's degrees awarded was 440, of which 13 were in architecture and the remainder in science. The 198 advanced degrees included 30 doctors of philosophy, 18 doctors of science, one doctor of public health, five masters of architecture, one master of city planning, and 143 masters of science. Three certificates in public health were awarded.

Among the candidates receiving degrees of master of science were eight naval constructors, graduates of the United States Naval Academy who completed the Institute's course in naval construction.

## To the Corporation

WILLIAM EMERSON, Dean of the Institute's School of Architecture, whose retirement was announced last fall, has been elected a life member of the Corporation. Recently chosen alumni term members who will join Dean Emerson on the Corporation are Charles Edison, '13, The Assistant Secretary of the Navy; Philip W. Moore, '01, Vice-President and Treasurer of Poor and Company, Chicago; and H. B. Richmond, '14, Treasurer of General Radio Company, Cambridge, retiring President of the Alumni Association.

Dean Emerson has been head of the Institute's School of Architecture since he joined the Faculty in 1919 after a notable career in architecture in New York, where he was much interested in the design of large-scale housing projects. Dean Emerson early foresaw the importance of city planning and took steps which led to development of courses in this field at the Institute. Through his influence the library of the School of Architecture has been greatly enriched. A graduate of the *École des Beaux Arts*, Dean Emerson served with distinction as major and director of the American Red Cross Bureau of Construction in Paris from 1917 to 1919, a task which won for him the ribbon of the Legion of Honor.

## Honorary Degrees

PRESIDENT COMPTON, who delivered the commencement address at St. Lawrence University in Canton, N. Y., received the honorary degree of doctor of laws. Erskine College of Due West, S. C., bestowed upon Professor Henry B. Phillips the honorary degree of doctor of laws. Professor C.-G. A. Rossby was awarded the honorary degree of doctor of science by Kenyon College of Gambier, Ohio. Dard Hunter received the degree of doctor of letters from Ohio State University, which awarded the doctorate of laws to Charles R. Hook, of the Institute's Corporation. To Vannevar Bush, '16, of the Corporation, Brown and Middlebury both accorded the doctorate of laws.

## Staff-Administration Relations

BY JULIUS A. STRATTON

TECHNOLOGY has at one time or another received a share of the criticism leveled against American institutions of higher learning by reactionaries and radicals alike. The most violent of these blasts are often as much a source of bewilderment to the professor as they are of concern to the alumnus. The professor is naturally dismayed to learn from one side that he has never been more than a vassal to the country's iniquitous 60 families, and is then baffled to hear from the other side that the curriculum is tinged by alien influence.

The truth is that, by and large, political and social opinion at the Institute is both moderate and sound: It is liberal in that it looks to the future rather than the past and holds that with good will and good sense this world can be made a vastly pleasanter place. It believes that improvement can be brought about only by change, but that mere change by no means always results in improvement. It tends to be sound by reason of con-



stant contact with economic and factual realities in the profession of engineering and scientific research, and it holds that a lasting betterment of social and economic conditions can be achieved only by men who are technically trained for their work and whose actions are not governed solely by political expediency.

A public which often views with frank cynicism the intervention of college professors in national affairs naturally asks what superior system the professors have evolved for the conduct of their own collegiate business. The relations of staff to administration in a large educational or research institution are not directly comparable to those of labor and management in industry. For example, it is very much more obvious that the faculty and administrative officers of a university must work toward a common end than that the best interests of labor are identical with those of the stockholders. For president, deans, and faculty alike, the real problem of the university is to maintain a constant awareness of the unity of their objective and a constant interchange of counsel which will enable them to achieve the objective most effectively. As the institution grows, this becomes increasingly difficult. Younger staff members are often as diffident in the presentation of good ideas to heads of departments as they are unwilling to make just criticism and reluctant to "waste the time" of deans and president, who often feel the need for frank faculty opinion.

During the past year the staff at Technology has met this problem by a novel experiment which seems full of promise. The nucleus of the idea was found in the Stu-

dent-Faculty Committee. Some ten years ago the Institute undertook a thorough revision of its curriculum. To foresee all the consequences of an extensive shifting of course requirements and reallocation of hours is not easy, and there is little wonder that the students found cause for complaint. To expedite the discovery and elimination of inequities, the late President Stratton appointed a committee of undergraduates, giving them instructions to consult with their fellow students and eventually make recommendations. The Faculty was so impressed by the moderation and general soundness of the student report that a permanent consulting committee was established with both student and staff members. This committee still functions, and if it has but little to do, this fact is proof that the major grievances of the students have been amicably settled. The Student-Faculty Committee is a channel through which suggestions and complaints of all sorts flow freely from the student body to the Faculty. It is also an agency through which the Faculty can make clear with complete informality the principles which govern educational policy. The advantages are in every way reciprocal.

A plan which works to such good purpose for the students has now been applied to further the best interests of administration and Faculty. The Staff-Administration Committee consists of seven members appointed by President Compton from the administrative group and seven staff members elected by their colleagues. For the purposes of the Committee, Heads of Depart-

Nearly a hundred tons of water will protect researchers while a hundred tons of iron and copper make nuclear particles fly in circles and manufacture radioactive elements by transmutation. That summarizes the story of the Technology cyclotron (shown here with Dr. Robley D. Evans, who is in charge of the cyclotron project, looking through the pole piece), now nearing completion, which is expected to be put into operation during the current summer. A synthesis of the latest engineering techniques of Technology's specialists in the fields of electrical, mechanical, building, and ventilating engineering, the new cyclotron is an instrument whose quality and the speed of whose construction probably cannot be approached elsewhere. It incorporates the best features of all cyclotrons built thus far. A high-frequency oscillator apparatus, which is more powerful than transatlantic radiotelephone transmitters but which must have its effect confined within the building, will be used to bring the neutrons and deuterons up to a speed equivalent to at least ten million volts. Two two-foot, wall-like tanks of water (shown at right of picture) keep the harmful effects of the rays from injuring the experimenters while they operate the machine by remote control. The cyclotron will be used to manufacture artificially radioactive elements which can be of use to the biologist and the physician. One important application of these elements will be in the study of the functions and diseases of the human thyroid gland. When small amounts of such elements have been injected into the body and allowed to circulate through the system, they can always be located because of telltale rays which they send out that can be detected by a method a million times as



M.I.T. Photo

accurate as any chemical one

ments are placed in the category of administrative officers and are represented by one member. Staff membership is for a period of three years. Nominations are first made by the regular nominating committee of the Faculty, and these are then circulated among all members of the staff who hold the grade of instructor or higher. Additional names may be added to the ballot if proposed in writing by any ten members of the staff. The nominating committee must make every effort to keep the staff group as representative of the instructing staff as a whole as may be possible, and there must at all times be at least one member of instructor grade. The administration is at present represented by Deans Harry M. Goodwin, '90, Samuel C. Prescott, '94, Edward L. Moreland, '07, and H. E. Lobdell, '17; Warren J. Mead, Head of the Department of Geology; Horace S. Ford, Treasurer of the Institute; and J. Rhyn Killian, Jr., '26, Executive Assistant to President Compton. The staff members are Professors Joseph H. Keenan, '22, James F. Norris, John T. Norton, '18, Albert A. Schaefer, Julius A. Stratton, '23, Dirk J. Struik, and Gordon S. Brown, '31. Because of his promotion to an assistant professorship, Dr. Brown will be replaced next year by Malcolm S. McIlroy.

The committee acts wholly without power. In principle its function is to consult and to make recommendations. In practice the staff members have discovered in a year's brief experience that, thanks to the cordial and wholehearted coöperation of the administration, the activities need not be confined to talk; things will also be done.

There are in every institution various sources of minor irritation which can be dealt with in short order. If, however, the activities of the committee were confined to the adjustment of minor complaints, the activities would be scarcely worth the effort. The committee contemplates no drastic changes or interference in af-

fairs which by general agreement are not its concern, but it feels itself obligated to consider those matters which bear upon the general welfare of the Institute. The current evolution of social and economic conditions has inevitably affected academic life and raised problems which are occupying the attention of every serious group of college officers. Foremost among these is the problem of tenure. The period of explosive expansion in college enrollments has ceased, and the time is coming when the advancement of a young teacher from one professional grade to another will depend quite as much upon room ahead as upon his own scholarship. More men with sound training must accept positions in secondary schools, as has long been the situation abroad, and such positions, in turn, will command greater respect. The current agitation throughout the colleges of the country over the subject of tenure is not an endeavor on the part of the professors to obtain permanent appointments for all grades. It is as much to the disadvantage of an able and ambitious instructor to find his path blocked by an unqualified man in a permanent position as it is a disadvantage to the institution which has such a man in its ranks. The need is not for permanency of tenure in all ranks but for an established procedure which is understood by every new man as he accepts his appointment — a procedure which provides for the elimination of unqualified men after an appropriate test period. In addition there is the question of whether it is not desirable that the officers of the institution share with the senior members of the faculty the responsibility for this elimination, as well as for the guarantee of reasonable security to those who remain.

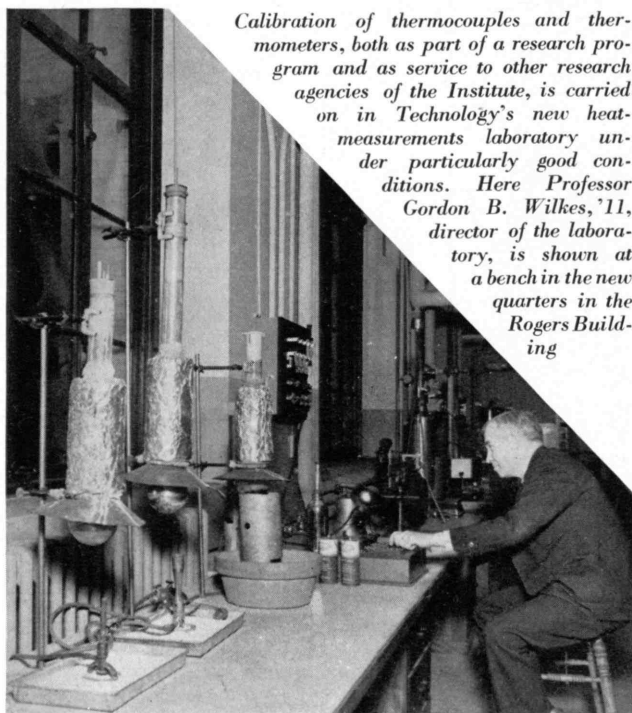
The staff group of the Staff-Administration Committee is now engaged in a comprehensive study of this problem of tenure. Any such endeavor demands coöperation. It must have the coöperation of the administrative staff, and there is abundant proof that at Technology this is always willing and ready. Even more vital to success, however, is the coöperation of every member of the instructing staff itself. The committee serves no useful purpose unless it expresses the true opinions of the staff.

### Going and Coming

LEAVE of absence for three years has been granted to C.-G. A. Rossby, Head of the Institute's Course in Meteorology and widely known for his work on the application of advanced meteorological methods to weather forecasting, who has become assistant chief for research and education in the United States Weather Bureau in Washington. During Professor Rossby's absence from the Institute, instruction and research in meteorology will be in charge of Sverre Petterssen, the distinguished Scandinavian meteorologist. Dr. Petterssen is a native of Norway and was educated at Oslo University. From 1925 to 1932 he served as meteorologist in the Norwegian Weather Forecasting Service at Oslo, Tromsö, and Bergen. From 1932 until the present he has been head of the Forecasting Institute in Bergen.

Dr. Petterssen has been a visiting lecturer and instructor at the postgraduate school of the United States Naval Academy and at the United States Navy

*Calibration of thermocouples and thermometers, both as part of a research program and as service to other research agencies of the Institute, is carried on in Technology's new heat-measurements laboratory under particularly good conditions. Here Professor Gordon B. Wilkes, '11, director of the laboratory, is shown at a bench in the new quarters in the Rogers Building*



M.I.T. Photo

base at San Diego, as well as at the California Institute of Technology and at the Weather Bureau in Washington. He has developed methods for quantitative forecasting on the movement of air fronts and air masses and low-pressure centers, and has contributed importantly to the literature on meteorology. Dr. Petterssen is a member of the leading international meteorological organizations and a member of several important committees.

Among the distinguished visiting lecturers on meteorology within the next few months will be Professor J. Bjerknes, director of the meteorological division of the Geophysical Institute in Bergen, Norway, and Professor V. W. Ekman of the University of Lund, Sweden. The former is world renowned as the principal author of the polar front theory. Professor Ekman is coming to this country early in August to lecture at the Woods Hole Oceanographic Institution under the joint auspices of that institution and M.I.T. Professor Ekman is noted for his oceanographic studies and has demonstrated that the effect of a steady wind acting on the surface of the sea produces a movement of surface water which is not exactly in the direction of the wind but deflected to the right thereof. As a result of this effect the counterclockwise wind system over the North Atlantic Ocean produces a piling up of warm and very saline surface water in the region of the Sargasso Sea. Thus this comparatively still area of the ocean, which has become a legend among mariners, has been given its first rational explanation.

### *Gifts and Bequests*

**B**ETWEEN July 1, 1938, and May 25 of this year, the Institute received in gifts and bequests a total of \$1,343,619. Dr. Compton told Alumni gathered at the dinner on June 5. Some additional gifts were expected during the remaining five weeks of the fiscal year. Said Dr. Compton:

This total exceeds by 40 per cent the annual average of gifts since 1930 and is exceeded only by the totals for 1931-1932 and 1937-1938. This is encouraging. However, an analysis of trends of gifts to M.I.T. relative to gifts to other educational institutions gives food for serious thought.

A report published this year by the John Price Jones Corporation gives, among other things, data on gifts and bequests received by 49 colleges and universities during the nine years before the depression and the first nine years of the depression period. Compilation for these 49 institutions, which include Harvard, Yale, University of Chicago, and Columbia, shows that gifts and bequests for nine years of prosperity totaled \$410,000,000 in round figures and for nine years of depression have been \$400,000,000. Taking out the four above-mentioned institutions, however, the total gifts and bequests for nine years of prosperity were \$213,000,000 against \$162,000,000 in nine years of depression.

When the four leaders are eliminated, gifts to the group declined more than one-third in the nine years of depression, bequests gained more than one-tenth, but the total of these two sources fell by nearly a quarter. It is significant that for both groups bequests were greater during the depression than during the prosperity years.

During eight years of the depression period—from 1929-1930 through 1936-1937—nine universities surpassed M.I.T. in the total of gifts and bequests received. If

we consider gifts alone, as distinguished from bequests, 25 colleges and universities exceed our record for gifts during these recent years.

Our endowment funds are exceeded by those of six universities in this country. The figures in the foregoing paragraph show, therefore, that we have slightly lost ground in our relative financial position (though I believe that this is largely, and perhaps more than, offset by our finance committee's excellent record of investments). But most striking in this analysis is the fact that more than half of these 49 institutions received larger gifts than we received during these eight depression years. For this fact I can see certain reasons, and from it we can draw an important conclusion.

The principal reason for the relative smallness of our record of gifts is probably the fact that we purposely made no major effort or campaign for funds during this period. We knew that our Alumni and friends were having their own financial worries, and our situation was not more desperate than theirs. Consequently, we devoted our major attention during these years to a strenuous effort to improve the efficiency of our own operations—by the elimination of activities of relatively less significance, the shouldering of a heavier teaching load by our staff, and the reorganization of our curriculum on a basis which is both more effective and more economical.

Actually, we sought minor funds for several specific new projects and then undertook the recent Alumni Fund campaign for recreational facilities to give better balance to our student life. Had we been in really desperate financial straits and thereby forced into a money-raising campaign to salvage the institution, I have faith that our constituency would have responded generously through their own sacrifices.

The lesson from the John Price Jones report is that people are still giving generously to education and have done so to surprising amounts even throughout the depression.

### *An Editor Honored*

**N**O one ever tried to claim for the Institute that it is a proving ground for editors. Yet Technology Alumni win recognition in the subtle occupation of editing. A bow to J. Newell Stephenson, '09, editor of the *Pulp and Paper Magazine of Canada* and also of the "Manufacture of Pulp and Paper," a five-volume textbook on the paper industry.

For this latter work, as a tangible expression of "his outstanding services in the technical advancement of the pulp and paper industry," Mr. Stephenson has been awarded the TAPPI Gold Medal for 1939 (Technical Association of the Pulp and Paper Industry), presentation being made by George Carruthers, President of the Interlake Tissue Mills Company, Ltd., and chairman of the Joint Textbook Committee of the Paper Industry of the United States and Canada. The large task that was this editing started in 1918.

Mr. Stephenson's achievement calls to mind a few other Alumni who are editors: R. Gordon Shand, '17, day city editor, *New York Daily News*; Kenneth Reid, '18, editor of *Pencil Points*; Richard Rimbach, '18, managing editor, Instruments Publishing Company; S. Paul Johnston, '21, editor of *Aviation*; Eric Hodgins, '22, formerly managing editor of *Fortune* and now its publisher; The Review's own J. Rhyne Killian, Jr., '26, head of the Technology Press; Donald G. Fink, '33, managing editor of *Electronics*; and Beverly Dudley, '35, managing editor of *Photo Technique*, McGraw-Hill's new magazine.



## NATIONAL DEFENSE — ITS TECHNOLOGY

(Concluded from page 402)

EMENY, BROOKS, with the statistical assistance of J. EDWARD ELY. *The strategy of raw materials, a study of America in peace and war.* . . . New York: Macmillan, 1934.

"A statistical study of the extent to which the United States could become self-sufficient in regard to food-stuffs and raw materials in time of extreme war emergency."

HOLLAND, W. L. (editor). *Commodity control in the Pacific area, a symposium on recent experience.* Institute of Pacific Relations, Stanford University Press, 1935.

"Contains contributions by more than a dozen economists on American and Canadian wheat control, Japanese silk and rice control, international tin, rubber and fisheries control, etc." — *Foreign Affairs*.

LEITH, C. K., and D. M. LIDDELL. *The mineral reserves of the U. S. and its capacity for production.* Prepared for the Planning Committee for Mineral Policy. Washington: National Resources Committee, 1936.

LEWIS, CLEONA, and K. T. SCHLOTTERBECK. *America's stake in foreign investment.* Washington: Brookings Institution, 1938.

"No student of American foreign relations and policies can afford to ignore this book. Its well-organized and clearly written text, numerous graphs and tables, and copious statistical appendices provide details hitherto lacking for a fuller understanding of the development of our economic foreign policies and for a clearer perception of the triumph of politics and militarism over economics in the chaos of international relations today." — H. H. Sprout in *American Political Science Review*.

STALEY, EUGENE. *Raw materials in peace and war.* New York: Council on Foreign Relations, 1937.

A study of basic raw materials and the effect of their unequal distribution among the countries of the world.

WALLACE, B. B., and L. R. EDMISTER. *International control of raw materials.* Washington: Brookings Institution, 1930.

Raw materials discussed include Chilean sodium nitrate, Japanese camphor, Franco-German potash combine, British export restrictions on rubber.

ZIMMERMANN, E. W. *World resources and industries: a functional appraisal of the availability of agricultural and industrial resources.* New York: Harper, 1933.

"Although a ponderous volume, the unique range of the substance and the interesting nature of its contents justify the space Prof. Zimmermann has taken. His method is not that of dry presentation of lifeless statistics. Resources, as he handles them, are living agents in mankind's service." — *Books* (New York Herald Tribune).

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BROOKS, B. T., and L. C. SNIDER. Oil and national defense; some aspects of petroleum shortage in the United States. *Army Ordnance*, January–February, 1936.

LEVINSTEIN, HERBERT. If war comes what of chemical supplies? *Chemical Industries*, April, 1937.

ROUSH, G. A. Strategic mineral supplies (a series of articles). *Military Engineer*, Volume 26, 1934, to Volume 29, 1937.

WALDSCHMIDT, W. A., '22. Strategic minerals in national defense (a series of articles). *Mines Magazine* (Colorado School of Mines), Volume 25, 1935.

WILLIAMS, C. E., '32. The new technical and economic importance of iron and steel scrap. *American Iron and Steel Institute Yearbook*, 1936.

### III. TECHNICAL PROBLEMS

*Aircraft Yearbook.* New York: Aeronautical Chamber of Commerce of America, Inc. Annually since 1919.

HAYES, T. J. *The elements of ordnance.* New York: Wiley, 1938.

*Jane's all the world's aircraft.* Compiled and edited by C. G. GREY and LEONARD BRIDGMAN. London: Sampson Low, Marston. Annually since 1909.

*Jane's fighting ships.* Edited by F. E. McMURTRIE. London: Sampson Low, Marston. Annually since 1897.

JONES, R. E., G. H. RAREY, and R. J. ICKS. *Fighting tanks since 1916.* Harrisburg: Military Service Publishing Company 1933.

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STEWART, C. J. *Aircraft instruments.* New York: Wiley, 1930.

TALLEY, B. B. *Engineering applications of aerial and terrestrial photography.* New York: Pitman, 1938.

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BENET, L. V. Machine guns: their development, limitations, and future demands. *Army Ordnance*, March–April, 1937.

BULLOCK, F. W. Development and standardization of types of military equipment. *Wire and Wire Products*, December, 1936.

CHRISTMAS, J. K., '23. The manufacture of high-speed tanks. *Mechanical Engineering*, January, 1939; Tanks and tactics: a discussion of mechanization and automotive ordnance. *Army Ordnance*, January–February, 1937.

HELDT, P. M. New developments in high speed Diesels. *Automotive Industries*, September 10, 1938, and November 26, 1938.

HUBBARD, J. C. Future uses of submarines. *United States Naval Institute Proceedings*, December, 1936.

JOHNSTON, S. P., '21. Our air defenses: The Navy. *Aviation*, November, 1938.

MAGDEBURGER, E. C. U. S. Navy participation in Diesel-engine development. *Mechanical Engineering*, September, 1937.

PORTEVIN, ALBERT. Evolution of gun steel. *Metal Progress*, December, 1937.

ROSSELL, H. E., '15. The case of the battleship. *Marine Engineering and Shipping Review*, May and June, 1937.

SAYRE, DANIEL C., '23. Our air defenses: The Army. *Aviation*, November, 1938.

WHAT must be done about national defense — now? *Automotive Industries*, February 11, 1939.

This is a special issue broken down into these parts: Brigadier General C. T. Harris, Jr., on mobilization; Major General Henry Gibbons, on motor vehicles; Major General C. M. Wesson, on ordnance; Major General H. H. Arnold, on aircraft; Captain J. H. Towers, on air transportation.

WHETZEL, J. C., '17. Modern steels and weight reduction. *Iron Age*, May 30, 1935.

The compiler wishes to thank the following for their advice as to material used in this list: Lieutenant Colonel Charles Thomas-Stahle, '22, and Commander H. E. Rossell, '15, of the Institute Faculty, and Miss Frances M. O'Halloran, librarian at the Watertown Arsenal.

This is the ninth in a series of M.I.T. Library reading lists. Copies of this list and the preceding ones may be obtained upon application to the Institute librarian.

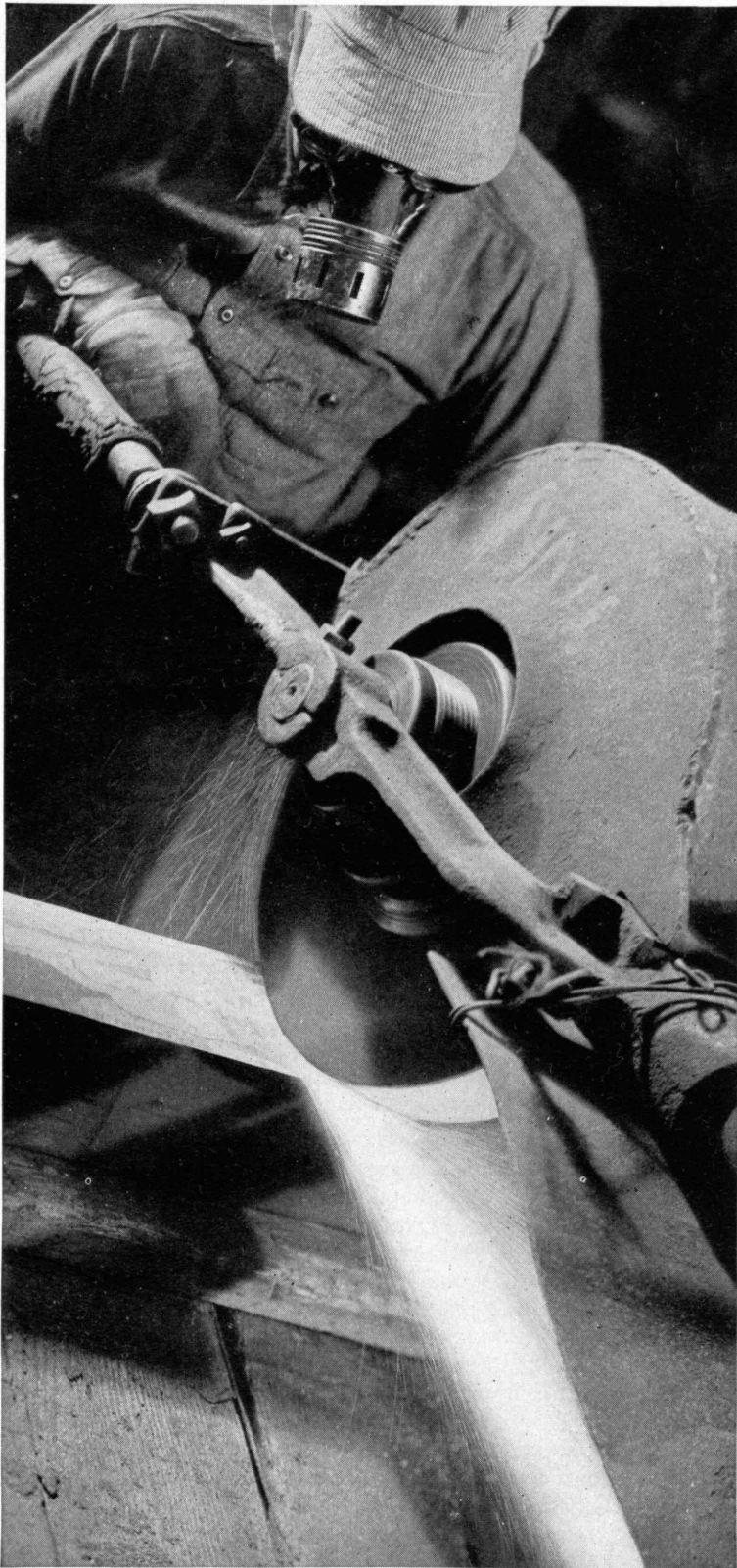


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## THE TREND OF AFFAIRS

(Concluded from page 396)

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The McClatchy chain of newspapers in California, for instance, is operating a transmitter at Sacramento and has placed 110 facsimile recorders in Sacramento and Fresno homes for three-week periods. Readers in these homes awake in the morning to find on their recorders a reproduction of a printed newspaper, ready for reading. Reports indicate that the people to whom recorders have been lent have expressed great enthusiasm for the service and approbation for the style of the paper itself, which is without headlines or banners and is ultracondensed.

The New York *Herald Tribune*, with the coöperation of the Radio Corporation of America, is publishing a facsimile as a World's Fair stunt, and the Federal Communications Commission has granted to more than a dozen radio stations regular and special experimental licenses for facsimile broadcasting.

## OPPORTUNITY FOR THE PROFESSIONS

(Continued from page 399)

the exact procedure which can be safely adopted is not at all clear. Engineer and architect find their necessity for adaptation in a somewhat different way from that of the medical man.

The increasing activity taken by government in regulation of business, the construction of great public works by government itself, require that the engineer and the architect establish their positions sometimes as advisers of business or of government, sometimes as arbiters, but always in a position of respect. It is proper for the advocate before the court to present only one side of a controversy with all the force at his command; the very nature of court procedure requires that he do so in order that both sides may be placed adequately before the judge. It is proper for a salesman to expound the merits of his own device honestly to the best of his ability, as his competitors do likewise. It is right for an engineer to advise only his own client and to devote his entire effort to so doing; but it is right only if he advise his client in regard to the whole truth, favorable or unfavorable, welcome or unwelcome. This he is bound to do whether his client be an individual, a company, an agency of government, or the public itself. This is an easy thing to do when relationships are simple; it is difficult when they become complex or when interests clash. It is doubly difficult when special interest wishes truth to be suppressed. The services of competent engineers are available to all groups. If engineers adhere to the ethical principle — if they are known for unimpeachable integrity — then engineering truth will not be suppressed.

We witness today an intensified clash of special interests: labor, capital, management, government; farming district and city; skilled artisan and common la-

borer. The professional man ministers to them all and stands in a group apart. Yet this is not always abundantly clear. The country doctor on his lonely rounds exemplifies the ideal. In the nature of things, however, special knowledge is more often demanded of those in positions of great power or influence. It is all the more necessary that the professional man emphasize his detachment. His personal opinions on controversial questions are his own, and he is a free citizen in politics. As a professional man, however, his special knowledge is available to all who need it and whose aims are honorable. He has delved and studied and struggled to a position of authority in his profession in order that through his knowledge he may advance the welfare of society as a whole, and not be but a partisan in a minor struggle. As strife becomes intense, it is well that there should be in society an authoritative group which refuses as a group to join either party and whose members freely take individual positions without prejudice — a group which emphasizes its detachment, whether the strife be between industrial groups, class groups, geographical groups, or any other groups.

The opinion of a professional man, outside of his own field of special knowledge, is, of course, the opinion of a layman. Lack of appreciation of this fact sometimes tempts individuals to try to carry over authority into areas where it does not belong. This does not help the reputation of the professions. Yet the converse is equally undesirable, because professional men bring to questions outside their own fields at least the precision and skill of trained minds, and they may therefore be intelligent laymen. We have great need for such in a democracy where questions of every sort are, in the last analysis, decided by the current of popular opinion. For a professional man to withdraw into the shell of his special interests is to lose the benefit of an important element in the shaping of public opinion.

Today this element is more highly important than ever before. The air is full of clashing theories of the prime function of government. A mathematician may not be an expert on government, but he certainly is capable of logical reasoning, and he long ago discovered how easy it is to be misled by preconceived conclusions. If he talks as a layman with laymen, there is much that he can add. The realm of gossip is rife with comparisons of race characteristics. A biologist may not be an ethnologist, but he certainly knows something about variations of species. The newspapers are full of discussions of international finance and theories of taxation. An engineer may not be an authority on finance, but he certainly knows something about costs. Intelligent, unprejudiced, articulate laymen are scarce. If the professions do not furnish their quota, the direct form of democracy into which we have gravitated may well prove to be self-destructive.

This, however, is no simple matter. Modern methods of swaying mass opinion are exceedingly powerful; the voice of reason is dishearteningly feeble. A statement made a thousand times to ten million people seems to produce mass conviction no matter how absurd the statement may be in the light of cold reason. A tightly organized minority, bringing mass pressure to bear upon legislatures, can create selfish (Concluded on page 418)



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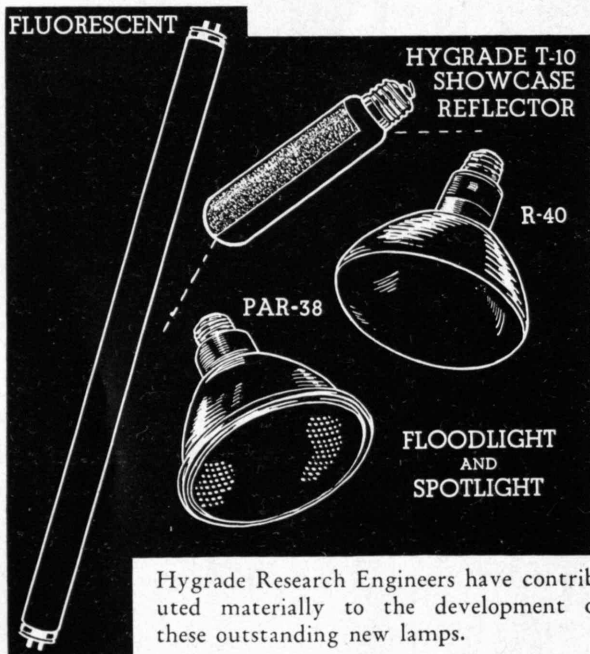
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## OPPORTUNITY FOR THE PROFESSIONS

(Concluded from page 416)

laws opposed to the interests of a diffused and inarticulate public. Hates and prejudices, fanned by demagogues or fanatics, can course with the fury of a forest fire through an entire population, driving the population to insane destruction even of its own prized possessions or of valuable sections of its own membership. Mass fear can cause a people to sacrifice ancient traditions in the cause of fancied security. Waves of cynicism, the urge to pull down all individual eminence as a rationalization of mass mediocrity, can destroy the confidence upon which all healthy social interrelationships must ultimately rest. The unmasking of hypocrites is accompanied by disbelief in all leaders. Superficial knowledge, too readily acquired, leads to loss of respect for sound intellectual attainment.

In this confusion there must be in the stream a rock unmoved by the turbulence about it, a haven of refuge for the troubled, a vantage point from which the course of the torrent can adequately be surveyed, a bulwark which can dam the current or force the flow aside. This can be furnished in modern society only by men of good will, having the reason to understand, the courage to oppose, the steadiness to resist. Such a group is found only among the professional men. Yet if they are to function thus, their reason and freedom from prejudice will be strained to the utmost. They must combine profundity with steadfast reliance upon simple truths. They must, in order that they may be accepted as advocates of the great cause of human welfare, forego blind adherence to minor causes. They must have the courage to speak and an insistence upon being heard. They must learn the arts of persuasion and preach to their fellows. They must acquire influence in small places. They must rally to support of the honest man, wherever he is found and whether or not they agree with his utterances. They must, above all, hold steadfast to the truth as they individually see it.

## MEN AND MEASURE

(Continued from page 401)

of the continual impetus of new inventions we are living in a more stabilized industrial age in which the desire for security is gradually taking the place of opportunity.

The creation of these great corporations means that the self-interest motive must largely disappear, for they cannot offer the same opportunities for individual profit, and, indeed, their basis of teamwork implies a community of interest that is very different from the older outlook. There are still major prizes to be won, particularly in this country, but for the great majority of the workers today there can be only a very limited prospect of material advancement apart from improvements in the social fabric and in the standard of living, and with these and with security the workers are the gainers.

The realization of this position is directing more and more attention in industry to the study of the incentives that I will class together as dependent on personal satisfaction: the satisfaction of sharing in the work of a great enterprise, pride in its achievements, the feeling of *esprit de corps*; the satisfaction of being able to make suggestions for improvements; the satisfaction of taking part in measures for the avoidance of disputes; the satisfaction of belonging to the social organization of an undertaking which finds its expression in social clubs, in benefit societies, in insurance schemes, in mutual improvement classes, and in coöperative activities of every kind outside the routine of daily work.

More and more it is becoming the business of management to study the methods by which along these lines each individual can be made to feel that he is living in a family with a common task. Perhaps the hardest thing is to convince him of the contribution that he can make to success, either personally or as a member of a group. But luckily man is a competitive animal with sporting instincts. We have found that by enlisting the psychology of sport in competitions for revenue between stations and districts, in punctuality leagues and efficiency competitions, with no reward but cups and shields, the interest of the men is aroused, they get the team spirit, and each man realizes the part that he can play. Recognition is one of the secrets of management, for it does so much to sweep away those negative inhibitions that are so common and so great a hindrance in preventing the possibility of achievement. It would be difficult to overestimate the creative value of the confidence born of success.

One classical example is to be found in the work of Michael Faraday. There is no greater contrast in scientific literature than that between his earlier chemical papers, characterized by their essentially practical outlook and accomplishment, and the brilliant flights of imagination that inspired his "Experimental Researches in Electricity," begun in 1831 — his 40th year. Many reasons have been given to account for this sudden transformation: One is that Faraday's powers were maturing gradually in readiness for that great outburst of intellectual activity; another is that he had fallen in love — but we know that Faraday fell in love in 1820 and remained in love all his life and, besides, I have never observed that that particular form of preoccupation has been prolific in scientific discoveries; a third suggestion is that Faraday had been elected to the Royal Society — but that happened in 1824. I am convinced that it was the discovery of electromagnetic induction in 1831, the success of an experiment which Faraday had previously tried again and again without result, which gave the new impulse to his work and gave him confidence in the promptings of his imagination.

It is the business of a leader to find the opportunities for success and to see that everyone is made to feel his part in them and to know that his part is recognized. For those working in the varied fields of engineering and applied science there are abundant opportunities for the application of knowledge to the needs of mankind.

We hear very often of the industrial revolution that made possible the great developments of the 19th Century which have affected the (*Concluded on page 420*)



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## MEN AND MEASURE

(Concluded from page 419)

human race so profoundly. But I maintain that the 20th Century has had its own revolution in the application of science and engineering to the daily needs of the home — a revolution which has meant leisure, greater comfort, and better health to many millions. This domestic revolution may be regarded as the repayment by the technician of a deferred debt long overdue for some of the social consequences of the mechanization of industry in the last century.

## NATIONAL DEFENSE AND THE ENGINEER

(Continued from page 404)

In our plans for industrial mobilization I regard the industrial engineer of paramount importance. Almost anyone of ingenuity can design a clever military gadget. It is no trick to produce a single armament unit. Unless, however, the item is fully useful and can be produced in volume, there is no great military gain. The industrial engineer is the one who keeps the Army practical in its planning. He passes upon our drawings and upon our specifications. When the design for munitions appears too intricate for utilization to best advantage in mass production, he recommends a change. The Army follows.

We need quality and shall not sacrifice for quality, but we never lose sight of the fact that we must be prepared to produce in quantity. Mass production, we realize, depends in the main on standardization. In the interests of standardization, the Army strives toward simplification of all military machines and weapons. Some degree of complexity, of course, is unavoidable, but we try to hold it to a minimum. When faced with the alternative between adoption of a complicated, delicately constructed machine of superior performance and one less perfect but more easily adjustable to mass production, we choose the latter. We hold that it is wiser to accept something which is 80 per cent efficient but which we can obtain, than to wait for an even better product which cannot yet be had.

It would be impossible here to itemize the full variety of engineering experience that we employ in the Army. Let me point out part of it. Consider, for instance, the construction engineer and the architect, whose services we utilize in the present housing program for our Army. The construction division of the Quartermaster Corps includes a complete engineering and architectural staff. This division designs structures in their entirety from foundation to roof, including all interior, mechanical, heating, air-conditioning, electrical, and other installations. It draws the plans not only for our small warehouses that cost but a few thousand dollars but also for our large buildings whose value runs to millions. The Quartermaster Corps recently completed at the Sacramento Depot in California a large engineering shop building, covering more than 13 acres under one roof, at a cost of almost two million dollars. The corps is now setting up at Fitzsimons General Hospital a medical structure to cost some three and a half million dollars.

In the development of aviation, the Army has felt perhaps the most conspicuous service of the engineer. The law of aerodynamics may not change, but the aeronautical engineer is learning more about it every day. Aviation is moving forward on the knowledge which the aeronautical engineer has acquired and passed down to the Army, the Navy, and industry. The efficiency of the airplane has increased. The cost of construction has been reduced. The airplane has become an economical means of transportation for freight as well as for passengers. Especially are we indebted to the engineer for many of the instruments which have made flying safer. His contributions in the field of radio make it possible for a pilot using only radio aids to navigation to leave New York City, climb above the clouds, fly directly to San Antonio, St. Louis, Chicago, or Detroit, come in accurately over the flying field without ever having seen the ground from the time he took off until the time he breaks through the overcast at his destination. The work of engineers also enables commercial air liners to maintain accurate flying schedules.

Today we see a growing use of the plane not only for the transportation of commercial passengers but for the movement of troops. In 1932 the British set the style in moving a battalion of five hundred men in nine planes in five days from Cairo to Bagdad. In 1936 General Franco carried ten thousand troops from Morocco to Spain to nullify the sea control that the Loyalists enjoyed. When Germany annexed Austria, she transported by air to Vienna several hundred men in one flight. When later, on the march to Czechoslovakia, German ground troops were unable to maintain their prearranged schedule because of burned bridges and obstructions hastily thrown up in their path, the infantry troops were carried to their destination by air transport. In the seizure of Albania, Italy moved twenty-seven hundred men by air across the Adriatic.

Is the time approaching when we shall have to plan for troop movements by air? Will the revolution in supply and transportation which our engineers effected in the use of the railroad in the years 1861 to 1865 now be repeated in the lanes of the air? One authority has estimated that for the cost of one *Queen Mary* we could build at least 50 Yankee Clippers which could move a large number of troops over a distance of three thousand miles more than five times as fast as could the *Queen Mary*. I quote this fact merely to indicate the strides that our aeronautical engineers are making and to point out how the commercial, industrial, and military efficiency of our nation may be increased as a result.

The position of aviation in the world of today is primarily the result of the work of the engineer. The human element that pilots the planes has changed but little. It is the quality of the instruments furnished to it as a result of the research, the experiment, and the achievement of the aeronautical engineer which has made possible the present progress.

Engineers of the M.I.T. are brought up on the motto: "*Mens et Manus*." So long as mind and hand work together intelligently in this world, the need for engineers will be restricted to services of peace; but peace or war, our engineers are an indispensable asset in the life of our nation.

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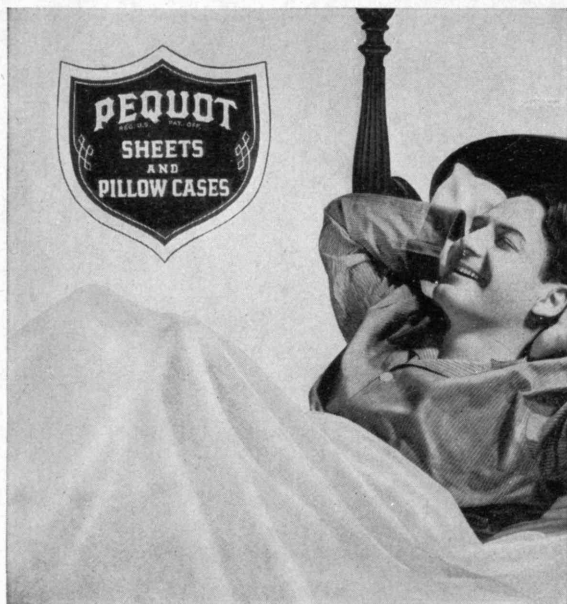
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## THE NAVY AND INDUSTRY

(Continued from page 405)

heavily toward the necessary equipment and overhead. The knowledge that the steelmakers gained through their efforts to supply the Navy was at once reflected in the increased use of steel in every branch of industry.

With each step in the Navy's development, the alliance between the Navy and industry has become stronger, and technological development of greater importance. During the World War, strange as it may seem, not a great deal was accomplished along these lines. As suggested before, the navy that exists when war is declared is the navy with which we must fight for the first months or years of the war. Of course progress was made — amazingly rapid progress — in antisubmarine warfare and in certain other special activities, but for the most part we were busy making use of the ships and equipment that were already at hand. After peace was declared, the scientifically trained men of the Navy and of civilian industry began to evaluate the lessons of the War. We evolved new and better strategy and tactics; we conceived of more deadly methods of attack; and we strove desperately to devise means of frustrating similar deadly attack by any enemy.

Probably the greatest incentive to scientific progress in the Navy was the experiment of arms limitation. I shall not comment on the worth or effectiveness of that great experiment. It was conceived in the passionate hope of a war-weary world, and if it failed, that failure must be attributed to the world's unreadiness for the millennium. Limitation of armaments placed nations in categories much as a boxing commission classifies fighters: Nations were allotted certain limited tonnages, the theory being that without superiority no nation would dare aggression. The natural result of this was that each nation strove to produce the most effective fighting units within the tonnages allowed. In the meantime aviation had gone forward by leaps and bounds, and the menace from the air became real and its counteraction urgent. Breaking away from the history of other postwar periods, our Navy did not go into a slump at this time. Fortunately for the United States, the Navy was in the hands of men determined to reach a new peak of efficiency; that they resisted the natural postwar slump in morale is a tribute to the fighting spirit of the Service.

These treaty ships were limited individually in tonnage, and the best brains of our naval and civilian constructors, engineers, ordnance experts, and other technicians were turned full blast on the business of producing ships with the greatest striking ability and the greatest resistance to damage. Every effort was bent to save weight in these ships without loss of strength. Welding procedures were improved; steel processes were im-

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proved; engineering designs were developed to produce greater speed and economy; and methods for controlling the weapons were refined to a degree hitherto unknown. Not only was the bond between the Navy and industry strengthened as a consequence, but the demands by the Navy on the scientists of the commercial field were greater than ever before. If international diplomacy dictated fleets of equal strength, it was a principal duty to provide equipment and to develop within the prescribed limits skills such as should ensure the best possible chance of success in the unhappy event of war.

Today the Navy's own facilities and design staffs can produce only a small part of the specialized equipment that goes into our ships and, as never before, industry is being called upon to produce that equipment. As a matter of fact, one half of our ships must, by law, be built in commercial yards.

In effect, a vast army of civilian workers has actually and indisputably become an integral part of the nation's naval defense. Much of our specialized equipment must be considered as highly confidential if we are to maintain the technical supremacy that American genius is giving us. Engineers in every field are working to solve the complex problems that the Navy Department presents, with the result that there are an ever greater understanding of naval requirements and the working of naval equipment, an ever increasing interest in those matters, and, by the same token, an ever increasing necessity for the full coöperation of industry in maintaining the security of our confidential inventions and preventing their compromise by overinquisitive foreign governments.

We are actually walking in the path that in an emergency could be switched to national mobilization. The day of the so-called limited war seems to be over, and today the accepted conception of war is inseparable

from the conception of the nation in arms. As far as the Navy is concerned, there has, by fortuitous circumstance, grown up a greater and greater dependence on industry for supply of the Navy's needs, and the transition from peacetime procurement to wartime mobilization of industry for the Navy's needs should be far less radical and less difficult than was true in 1917. The Navy is continually evaluating its possible wartime needs and is canvassing the commercial field and the field of labor to the end that wartime orders may be placed quickly and filled promptly. When we speak of the technology of national defense, we actually are speaking of the technology of war. The splendid and healthy growth of industry's understanding of naval technology may well be a source of comfort to the nation in these trying times.

My conception of the well-known navy yard of song and story is actually that of a naval shipyard where ships can be built and where all the needs of a ship can be fulfilled. Supplementing these shipyards we have other special establishments devoted to specialized equipment such as guns, fuses, fire-control equipment, powder, and other items. In slack times (from a naval standpoint) these industrial plants are operated with a relatively small force; during periods of great naval expansion, such as we are undergoing today, they are operated at virtually wartime capacity, and the needs of the Navy still far exceed the capacities of its yards and plants. Our demands upon industry will continue and will increase until such time as the present world emergency passes over.

So far we have just been reciting the history of technology from the Navy's view of national defense and have been building up a case justifying mutual technological coöperation between the Navy and industry. If I have given the impression (*Continued on page 424*)

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## THE NAVY AND INDUSTRY

(Continued from page 423)

that the Navy and industry are to be congratulated, that is the impression I intended to convey; but if you gather that the ultimate has been attained in technological coöperation between industry and the Navy, I have not made myself clear, for new problems are increasing in geometrical progression, and our efforts in this field must be redoubled rather than relaxed.

The technological demands of aviation are so wide that a somewhat detailed discussion of this aspect of technology will give a good idea of the Navy's general appreciation of its importance. Progressive increases in the value of airplanes to the Navy, to a greater extent, perhaps, than is true of other naval equipment, depend absolutely upon the continued intelligent application of fresh scientific research and ingenuity. This fact is too well known among men of technical background to require proof. I do wish to emphasize, however, that the urgent need for aeronautical research, experimentation, and development which has been widely discussed in recent months has not been exaggerated. This need is as pressing in the aircraft-engine field as in the fields of aerodynamics and structural design.

Industrial science is essential also for unceasing improvement in all kinds of materials for aircraft — their engines, propellers, and other component parts, not to mention their military equipment, which also calls for constant improvement. Excellent materials are available today, but for the future we require greater ratio of strength to weight and greater resistance to fatigue and corrosion. Government agencies can state needs, encourage development of materials, conduct tests, and keep industry informed of results, but industry must carry on the actual development. The problems of further improvements in materials for army and navy aircraft are more or less similar, except possibly for the serious corrosion problem forever faced by the Navy. Salt-water corrosion has truly amazing effects on improper or inadequately protected materials in airplanes. It can ruin an airplane so rapidly that we dare not neglect it, even in airplanes of short expected service.

Production and technical control of the metals used in aircraft should be developed further in order that complete uniformity of composition and quality may be achieved and all uncertainty obviated. This will permit

elimination of surplus margins of material and weight, without sacrifice of strength and safety. Metallurgists and other technicians of reduction plants, foundries, forge shops, and rolling and tube mills can lend invaluable aid by establishing and controlling methods which will produce more nearly perfect forgings, castings, sheets, tubes, wires, and other metal products.

Manufacturing technique has a far-reaching influence on the fitness of naval aircraft. The best design will be greatly reduced in effectiveness by lack of refinement in external finish, which affects the speed of the airplane, or by crudeness, which adds unnecessary weight or causes destructive vibration. The Navy Department offers bonuses on a dollars-a-mile basis for speeds (in experimental airplanes) exceeding the contract guaranteed speeds, and on a dollars-a-pound basis for experimental airplanes which weigh less than the guaranteed amount. The detail designer plays an important part in bridging the gap between theoretical strength of materials and practical airplane design. However, without shop excellence the final result will not measure up to the full possibilities of the design.

Lack of sufficient means for complete tooling has made maximum precision and best quality of finish difficult problems, except at high cost. Yet airplanes, and especially their engines, require great precision in more places than almost any other manufactured articles of equal size and weight. With increases in quantities of airplanes and engines of each design it should be feasible to secure even more excellent exterior contours, even closer tolerances, and lightest weight permitted by the available materials, at an over-all saving in cost, by means of more and better-designed dies, forms, and fixtures.

We believe that the manufacturing problems of producing any desired quantity of airplanes can be solved by the various branches of American industry and their many kinds of craftsmen. The real problem lies in providing the industry and the craftsmen with the best materials and the best designs in the world. For these we look to the technicians of America.

In the ordnance field, metallurgical and chemical research go on unceasingly; stronger and lighter materials and more effective fire-control equipment are constantly sought; manufacturing processes are being improved; the manufacture of explosives advances. The Navy has just completed a comprehensive study of machine tools



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with the wholehearted collaboration of the machine-tool builders. I dare not even make a start on the subject of industrial chemistry; probably no other research activity in the world has played such an important role in our daily lives, as well as in the business at hand — defense. The verdict of the evidence is that technology is the lifeblood of our national defense.

The position of M.I.T. in the naval scheme of things is well known: Our naval constructors are trained at the Institute; many of our naval aviators continue their studies there. In the civilian world the roster of M.I.T. graduates indicates that many vital and key jobs in industry are held by M.I.T. men.

I cannot conclude a discussion of naval technology without an acknowledgment of the part that labor has played in the advance of naval technology. Labor has met the demands for increased skill and has implemented the visions of the naval tacticians and the brilliant plans of the designers. Labor has kept pace with the designers and must jointly receive credit with the scientists and designers for the advance of naval technology. But labor must not be complacent, and it should avoid shortsighted selfishness. There is an ever greater need for skilled mechanics, and industry and labor must get together to the end that our labor resources will be equal to the nation's demands for the implements of preparedness and equal to the tremendous production demands of war, should war overtake us.

## THE INSTITUTE AND THE FUTURE

(Continued from page 407)

opportunities for social planning on a scale formerly undreamed of. So I make no apology for affirming faith in our M.I.T. objective. But I would point out a very important feature of the situation which makes our program even more important than it would otherwise be.

Having recognized the opportunities of a greatly expanded social security program and perhaps not adequately realizing that this program has been made possible only by the productivity that has come from technology, there is grave danger that the public and its leaders may push this program beyond the limits which the present state of technology can support. If this should happen, the whole structure of social security and high standards of living may fall like a house of cards. This danger is, I believe, very real. It can be combated by two forces: first, better education of the public, and especially of its leaders, to a realization of the necessity for keeping the demands of taxation and regulation within the limits which our technological production can support; second, the improvement of technological processes themselves, so that the increased demands for social security can be met by production and taxable profits. Both of these requirements — education of the public in matters of technology and its economic consequences, and development of new and improved technological processes and products — are the business of the M.I.T.

Closely akin to the foregoing analysis is another aspect of our economic situation on which major attention has been focused — the problem of (Concluded on page 426)

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## THE INSTITUTE AND THE FUTURE

(Concluded from page 425)

unemployment. After the necessary emergency relief measures, and the efforts to stimulate employment by huge pump-priming projects, and the attempt to produce employment by arbitrarily distributing wealth, the public and its leaders are coming to realize what more scientifically minded people realized from the beginning, namely, that permanent new employment can come, as it has always come in the past, only in two ways: through the technological development of new products which people will be willing to work for and to pay for in order to possess, and through technological development of more efficient methods of production which will lower costs to permit increased volume of purchase.

Any attempt at social planning which fails to recognize and provide for this essential technological basis of prosperity is a reversion to the horse and buggy days and must be considered as based on the same restricted viewpoint as that of the social planners several hundred years ago but with this difference: They had no way of knowing what science could contribute to their plans, whereas we have the lesson of the intervening history to guide us.

I have no reservations in defending the objectives of this institution on the grounds of their vital importance to the welfare of this country and their benefit to mankind generally. But can we not go farther? Is not the time strategic and is not the foundation already laid for undertaking a much stronger program of technological education and research than anything which we have yet accomplished? I should like to see the M.I.T. become the spearhead in a wide movement to put science to work for the national welfare.

Our staff are ready and anxious to undertake such an enlarged program. They already have laid out many of the paths they would follow. The Alumni Association is making its plans for broadening the base for financial support of the Institute through inauguration of a continuing alumni fund as a medium for contributions by Alumni who would thus express their loyal pride and their conviction that the M.I.T. program deserves support.

The proper course for this institution seems to me to be very clear. It is our duty and great opportunity to create more effective means, through education and research, for advancing science and its useful applications.

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**1939 GRADUATES**  
*(as of June 5, 1939)*

The results of a recent employment survey of the Class of 1939 are shown in the table below:

EMPLOYMENT STATUS	<i>Recipients Doctor's Degree</i>		<i>Recipients Master's Degree</i>		<i>Recipients Bachelor's Degree</i>		<i>All Groups</i>	
1939 GRADUATES as of June 5, 1939	No.	%	No.	%	No.	%	No.	%
Have Accepted Employment.....	38	78	122	80	191	46	351	57
Plan Further Study.....	4	8	2	2	46	11	52	8
Unclassified.....	7	14	28	18	180	43	215	35
TOTALS.....	49	100	152	100	417	100	618	100

Preliminary figures on Fall degrees indicate the following:

	<i>No. of Degrees (Tentative)</i>	<i>Number Placed</i>	<i>% Placed</i>
Bachelors.....	53	17	32
Advanced Degrees.....	151	97	64
	204	114	56

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# NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

### *Technology Club of Albany*

On April 24 the final dinner meeting of the 1938-1939 season of the Club was held at the Albany University Club. Bill Scofield '23, our acting President, presided over the gathering which elected the following officers for the coming year: President, William D. Scofield '23; Vice-President for Albany, Paul N. Hilliard '22; Vice-President for Troy, John G. Fairfield '16; Secretary-Treasurer, Carl H. Anderson '27. The election of two vice-presidents was introduced so as to have an officer in each area to keep in close contact with the Alumni in his vicinity.

We were fortunate in having Professor Prescott '94 with us at this meeting, and his talk concerning current research work at the Institute was very interesting and instructive. The question period following the talk was participated in by all — particularly those questions having to do with "coffee." Many thanks to Professor Prescott for this enjoyable evening. — The Club is looking forward to another successful year under the guidance of Bill Scofield and the newly elected V.-P.'s — CARL H. ANDERSON '27, *Secretary*, New York Telephone Company, 158 State Street, Albany, N.Y.

### *M.I.T. Association of Buffalo*

About noon on Saturday, May 20, some 35 Alumni gathered at the William Simon Brewery. A fine lunch was served along with copious supplies of the finished product of this plant. The group was divided up and taken on a complete tour of the brewery, starting with the receipt and inspection of the raw material, on down through to the final inspection, bottling, and shipping of the beer and ale. The brewmaster explained the processes and answered the numerous questions of the members. As evidenced by the unwillingness of the members to adjourn, a fine time was had by all.

The executive committee has decided not to hold an election of officers for the new Club, as present ones were elected in January and will hold office until 1940.

Earl D. Fraser '37 of Clarence, N.Y., has left our district for 50 Wendell Street, Cambridge, Mass.; George F. Fynn '22 has taken up residence at 53 Vernon Place, Buffalo, N.Y.; and your Secretary has repaired to the address which follows. — JOHN D. RUMSEY '33, *Secretary*, West River Road, Grand Island, N.Y.

### *Technology Club of Chicago*

Club activities continue at high pitch and big volume — nearly 200 were present at the smoker held in the Bal Tabarin

of the Hotel Sherman on May 18. Guest of honor was our worthy Dean, H. E. Lobdell '17, whose announced subject was "Night Life at M.I.T." But, as is the custom with speakers, his talk wandered far from the subject; he feared that any talk on this topic might prove too embarrassing to many members present. So Lobby brought us up to date with the daytime activities of M.I.T.

A complete new constitution and set of bylaws for the Club were submitted and adopted in the record-breaking time of 27 seconds flat. The new board of directors likewise were unanimously elected: Louis H. G. Bouscaren '04 and H. Felton Metcalf '22 (terms to 1940); Harold B. Harvey '06 and George E. Wallis '09 (terms to 1941); John Drum '26 and Thomas F. Russell '27 (terms to 1942).

Charles Watson Newhall '28 gave a humorous account of his own start in instrument flying in introducing Captain Richards of United Air Lines, who covered the basic methods of beam flying. Miss Nolan, stewardess of United, lent her own fascination with a description of this specialized work. Mr. Lampka of International Business Machines Corporation put a personal touch to the evening with his test-scoring machine and gave a talk about it. The machine was fed throughout the evening with questionnaire sheets filled in by the members — who were surprised or shocked (as the case may have been) to see their I.Q. rating turned out instantaneously by this device.

Three walls of the room were illuminated with 10-foot-square pictures thrown by stereopticons, showing the M.I.T. seal, the dome and columns of the main entrance, and a picture of President Compton, this being the product of work done by good old Lonsdale Green '87 through the courtesy of his friend Gus Bering, Secretary-Treasurer of the hotel. Enter on the records that the high scoring of this smoker was due to the special committee for this occasion: John Drum '26, chairman, Trevor K. Cramer '30, James A. Drain, Jr., '26, George R. Weppler '37, Charles Watson Newhall '28, and Mead Bradner '38. Prior to the 8:00 P.M. smoker, there was a 6:00 P.M. dinner of the executive committee. Forty-seven were present, which meant a 100 per cent attendance of all who were in the city.

On April 8, Trevor K. Cramer held a party at his home for his Class of 1930. Thirteen were present. — Harold B. Harvey already has made great progress for the new directory of the Club. Anybody who knows Harvey knows he can be counted on to produce an attractive edition. It will include a history of the Club, prepared by Lonsdale Green.

The ten Honorary Secretaries of Chicago, together with Dean Lobdell, were in session May 19 and 20 interviewing the

scholarship applicants from the Chicago area. The Alumni Regional Scholarship, which gives full \$600 tuition for the freshman year, was awarded to Henry S. Grauten of Evanston, Ill. In addition, recommendations were made for the awards of freshmen competitive scholarships, covering part tuition, to 21 young men from this district. — EDMUND G. FARRAND '21, *Secretary*, 1200 Old Colony Building, Chicago, Ill.

### *M.I.T. Club of Northern New Jersey*

The officers for the 1939-1940 season, elected at the annual meeting of the Club on April 20, are as follows: President, William B. Coleman '24; Vice-President in charge of program, Miles Pennybacker '23; Assistant Vice-President in charge of program, D. Arthur Straight '24; Vice-President in charge of membership, John M. Keck '23; Assistant Vice-President in charge of membership, Earl C. McMahon '26; Vice-President in charge of regional meetings, Charles E. Roche '23; Regional Chairmen: Richard S. Bicknell '10, Raymond Haskell '03, Sumner Hayward '21, Benjamin W. Dow '09; Treasurer, Maxwell K. Burckett '21; Director of scholarship activities, Alfred I. Phillips, Jr., '10; Secretary, Clayton D. Grover '22; Assistant Secretary in charge of records, Freeman B. Hudson '34; Assistant Secretary in charge of publicity, Newton S. Foster '28.

Members of the executive committee at large are: Carole A. Clarke '21, Warren H. Dolben '30, William J. Grady '22, William S. LaLonde, Jr., '23, William J. Lutz '23, Milton M. Manshel '22, August P. Munning '22, John H. Teeter '22, and Arthur K. Wing, Jr., '31. Members of the advisory committee are: Arthur R. Brooks '17, Allan R. Cullimore '07, Gordon G. Holbrook '10, Frank B. Jewett '03, Arthur W. Lunn '09, George W. McRae '10, James F. Maguire '17, Winfield I. McNeill '17, and Everett W. Vilett '22.

While the "Stein on the Table" activities of the Club are over until next fall, the real serious club activity goes on with maximum intensity. We allude to the work of the scholarship committee under the directorship of Al Phillips. Many boys and their parents are being interviewed and advised. The men who are giving up so much of their time to this work deserve and receive the unstinted praise and thanks of the Club and its officers. — CLAYTON D. GROVER '22, *Secretary*, Whitehead Metal Products Company, Inc., 303 West 10th Street, New York, N.Y. FREEMAN B. HUDSON '34, *Assistant Secretary* (for changes of address), Colgate-Palmolive-Peet Company, 105 Hudson Street, Jersey City, N.J. NEWTON S. FOSTER '28, *Assistant Secretary* (for publicity), 73 Daniel Avenue, Rutherford, N.J.

### *Technology Club of Panama*

The Club had a no-host dinner at the Union Club in Panama City, Republic of Panama, on Friday, May 12. Meade Bolton '16, President of the Club, was toastmaster for the evening. As there was no principal speaker, each member present was called upon to give any news about himself which he might wish disclosed and to make any comments desired. The general opinion of all members present was that the meetings of the Club were too infrequent and that the Secretary should take steps to insure one meeting every three months.

Present were Meade Bolton '16, Eduardo Icaza A. '23, Isbell F. McIlhenny '23, Lewis B. Moore '26, William R. Grunwell '28, Walter A. Key '29, Manuel P. Calderon '30, Homer L. Davis, Jr., '30, Antonio J. Sucre '31, John J. Carey '34, Constant W. Chase, Jr., '34, Earl K. Murphy '34, George C. Dunlap '35, Joseph A. Smedile '37, Wilder Moffatt '38, and Milton I. Wallace '38. — CONSTANT W. CHASE, JR., '34, *Secretary*, Box 77, Balboa Heights, Canal Zone.

### *M.I.T. Club of Northern California*

This summer many Alumni will be visiting the Golden Gate International Exposition on Treasure Island, and to them we want to extend a very cordial invitation to attend our regular Tuesday luncheon meetings, held at the Engineers' Club, 14th floor of the Insurance Center Building, 206 Sansome Street, San Francisco. At a quarter past twelve o'clock is the time to put in an appearance.

All visiting Alumni are requested to register at the Pan American Airways traffic desk on the main floor of the administration building on Treasure Island. Here we have provided a registration book and a card file of all Alumni in the western states, something very convenient for looking up old classmates now living in the Far West. — BERT O. SUMMERS '34, *Secretary*, 1132 South 2d Street, San Jose, Calif.

### *Technology Club of Schenectady*

The Club held its spring meeting at Hale House, Union College, on Monday, May 15. After an excellent dinner of roast duck, Edward L. Bowles '22, Professor in the Electrical Engineering Department at Tech, spoke informally on his connection with the Institute's work on fog dispersion, ultrahigh-frequency communication, and blind landing of airplanes. The talk was intensely interesting and served to point out the innumerable engineering problems that arise in connection with a new development. The group was small but cosmopolitan, with representatives of several different Classes, including one of the recent coop students.

Anthony deH. Hoadley '26, President, appointed Karl A. Pauly '96, James S. Woodward '25, and Leon J. Goldberg '26 to the nominating committee for next year's officers and adjourned the meeting

with the suggestion that the club members consider the possibility of a summer meeting in the form of a picnic, the date to be decided later. — THERON C. JOHNSON '33, *Secretary*, Engineering General, Building 23, General Electric Company, 1 River Road, Schenectady, N.Y.

### *M.I.T. Club of Central New York*

On Wednesday evening, April 26, at 6:30 P.M. some 14 members of the Club assembled at the University Club in Syracuse to attend the annual meeting for the purpose of electing officers for the ensuing year and to hear Samuel C. Prescott '94, Dean of Science at the Institute, describe some of the research programs now being conducted there. At the conclusion of an excellent dinner, Harold P. Gray '16, President, called the meeting to order to hear the reports of the Secretary and the nominating committee.

The election of the new officers followed, at which time Edwin A. Gruppe '22 was elected president; Francis D. McKeon '26, vice-president; and Henry W. Blackburn '08, secretary. Dean Prescott then spoke about some of the more practical results which have grown out of the many research problems at the Institute. More than usual interest was apparent at the close of the talk in the many questions and comments on the part of the members. The meeting adjourned at 10:30 with a rising vote of appreciation to Dean Prescott for his splendid presentation. — HENRY W. BLACKBURN '08, *Secretary*, 240 Roosevelt Avenue, Syracuse, N.Y.

### *Technology Club of Central Florida*

On April 14 the Club held a dinner meeting at the Clearwater Yacht Club on Clearwater Beach. After the annual business meeting Donald Roebeling showed colored motion pictures of his amphibian machine for rescues in the Everglades.

The following members and guests were present: Harvey M. Mansfield '83, Tampa; Theodore H. Skinner '92, Clearwater; William H. Messenger '92, St. Petersburg; James Talbot '96, Dunedin; Albert W. Higgins '01, St. Petersburg; Albert N. Morton '04, Dunedin; Franklin O. Adams '07, Tampa; Archer C. Nichols '08, Clearwater; James J. R. Bristow '14, Safety Harbor; Max J. Mackler '17, Tampa; Malcolm R. McKinley '19, Tampa; William W. Upham '23, St. Petersburg; J. Allen Weaver '23, St. Petersburg; Harry L. Johnson '32, Tampa; Bretton Perry '33, Tampa; Edward W. May '34, Clearwater; Donald Roebeling, guest, Clearwater; and Sam W. Harris, entering Class of '43, St. Petersburg. — MALCOLM R. MCKINLEY '19, *Secretary*, Tampa Electric Company, Tampa, Fla.

### *Washington Society of the M.I.T.*

The Society held its May meeting on the 19th at 5 P.M. in the Mirror Room of the Lafayette, with Ed Merrill '09, Vice-

President, in the chair. After complaint of being "shut off" at the annual dinner, Proctor Dougherty '97 was given the floor and delivered greetings that Alfred E. Hanson '14, our Secretary, had telegraphed from Jackson, Tenn., on the night of the annual dinner — the first he had missed in 22 years. Dougherty announced, with regret, that Commander Patch '10 was attending his last meeting, due to orders sending him to Camden, N.J. He also called for a show of hands of those planning to attend the June reunion. Allen B. McDaniel '01 invited us to hold our next meeting on his grounds at Waterford, Va., holding a picnic to be attended by Tech men and their families. McDaniel's estate is about seven miles beyond Leesburg, and the date was set, tentatively, for June 24. A newcomer introduced was Conrad H. Young '96, who paused briefly in his travels to pay us a visit. The nominating committee for next year was announced as Allen B. McDaniel, chairman, Joseph Y. Houghton '26, and Joseph W. Clary '96, who reported in June to President James '07.

Our speaker, James V. Bennett, director of the bureau of prisons of the United States Department of Justice, talked on "Some Prisoners I Have Known." Bennett announced he had nothing to sell, no appropriation to gain, desired no new customers, and that this was, strictly speaking, no plug but merely a description of what the pen is like. To furnish an understandable description of the type of problem which the prisons encounter, Bennett described intimate details of the story of Roy Gardner, for a starter, following this with stories regarding two of his lady prisoners in Michigan. While the public generally has an inkling of the problems of prison authorities, these intimate stories of chronic jail breakers aided in making it more vivid. If we had to go to jail, we would much rather do so under Bennett as director of prisons than under some of the social reformers we have met. He appears to be a "real guy" — keen sense of humor and understanding, and sympathy for the point of view of the prisoners, as well as concern for their future as citizens. He is not the preacher type; he recognizes the kind of man with whom he has to deal, and we imagine he can be "tough as nails" on occasion but dispenses justice with fairness and a friendly, human touch.

The greatest problem of the prisons is that over 50 per cent of the "graduates" return within five years. It is a problem to individualize the treatment of these "eight-ballers." Bennett says the trouble, primarily, is that they don't get a break from "good" people. The man just out of jail has a black mark against him, and nobody will give him a fair chance. Following a movie showing something of the Federal prison setup, the former and present way of regulating prisoners, and so on, Bennett had to answer many questions, indicating the keen interest of his audience. In connection with prison industries, we are not expanding them much. Their products supply various government agencies, and their prime



reason for being is the education of prisoners in a trade, so that they may later become useful citizens.

Fifteen million dollars were expended for prisons last year, and we have 18,350 Federal prisoners, as contrasted with 16,000 about two years ago. The problem of increased prison population, Bennett feels, is not due to increased crime but to new laws regarding crime, and to stiffer sentences. Last year, for example, it became a Federal crime to trade in untaxed marijuana, as a result of which 1,500 persons were prosecuted and 500 jailed. Federal prisons received 1,259 men last year on infraction of laws passed since March, 1934. There has been a definite shifting of responsibility, resulting in a pickup on the part of the Federal government. Long sentences are a real problem. Bennett feels no cure can be accomplished by harsh punishment. Four years ago the average prisoner received 19½ months; now he receives 24. Whereas England last year put away only 85 men for five years or more, we do that in a week or a day here. Answering further questions, Bennett said the days of the striped suit, shaved head, water cure, and incarceration shackled to bars have practically disappeared. Nowadays we obtain discipline by incentives and obtain good behavior by a system of credits.

Following the talk we enjoyed an excellent chicken dinner served by the Lafayette; and had, and used, the opportunity to get together a bit and chew over old and present times, really the best part of the evening. The following members and guests were on hand: James V. Bennett, guest speaker, C. D. Persina, guest, Mr. Mears, guest, George W. Stone '89, Frederick E. Fowle '94, Joseph W. Clary '96, George E. Stratton '96, Conrad H. Young '96, Proctor L. Dougherty '97, Frederick A. Hunnewell '97, Martin Boyle '98, Amasa M. Holcombe '04, Ralph E. Tarbett '05, Benjamin S. Hirschfeld '10, Ernest L. Patch '10, Benjamin F. Thomas, Jr., '13, Alfred E. Hanson '14, Frank E. Richardson '16, Chester K. Allen '17, Horace M. Baxter '17, Louis J. Grayson '19, Al Francis O'Donnell '19, George W. Anderson '20, Perry R. Taylor '21, Kenneth Bernard '22, Rudolf H. Blatter '22, James R. Morton, Jr., '22, William K. MacMahon '22, Paul J. Culhane '23, G. Donald Fife '24, John D. Fitch '24, Harry B. Swett '25, Theodore L. Soo-Hoo '26, Oliver G. Green '30, Frederick W. Turnbull '30, Patrick J. D. Harney '31, Henry D. Randall, Jr., '31, Mario V. Caputo '31, Freeman G. Corkum '31, George E. Wuestefeld '34, Charles L. Wright, Jr., '34, John Lowe, 3d, '37 — ALFRED E. HANSON '14, *Secretary*, 3424 Quebec Street, Northwest, Washington, D.C. WILLIAM K. MACMAHON '22, *Review Secretary*, 818 25th Street, South, Arlington, Va.

## CLASS NOTES

1877

We give you here the rest of Francis Bacon's diary of his Athens trip in 1938: "May 7: Hill left early this morning by

bus for Corinth. Ladies left last night, their 'baggage checked for Troy,' and deJong and I are left alone in the house. Beautiful day — sunshine and warm. Athenase came with car at 9:30, to American Express for letters, Sidney Nowill's emporium, handkerchiefs, extra suitcase; go to museum. I walk entirely around to see what is new; all about as before; through the vase room; very tired, too much for F.H.B.; ankles and feet swell up. I see now after this I must confine myself to the three or four Archaic rooms. Lunch at Averoff, where I used to come with the Brueckners and crowd from the Kerameikos. Arrange to have table in corner reserved. Taxi to Plutarchos; find card from Dr. Karo saying he will call and get me. This night, head in a whirl, so much excitement and things to think of. Tried to calm myself by reading. Jane Austen: 'Pride and Prejudice,' no go; Shakespeare, Herodotus, ditto; found in a bookcase autobiography of Kate Douglas Wiggin about early days in Maine, at Salmon Falls, Saco, Gorham, and places I knew, for I had called once on Kate at Quillcote and was received in the Barn room, all of which calmed my soul and I could sleep. Karo telephoned he will come for me on Monday morning.

"May 8: A beautiful day — watch from my pillow the rising sun gilding the apartments opposite. Am to lunch today with Adossides at Psychiko. Write letter to Cornelia Damon about Kate Douglas Wiggin book, how it comforted me. Cornelia was at Gorham female academy and must have known her. Write a stack of post cards to everyone I could think of. About 1:15 car comes with Alecco Adossides driving and Bessie and her husband, George Trypanis; out on Cephissia Boulevard, now much built up; warm welcome from Helle and Anastas! Garden now grown up with trees and flowers. Many new villas built; getting acquainted with the children. Bessie, the only daughter, a slim young woman, very bright and quick in her movements; her husband, an engineer educated in England, in Electric Light Company. Alecco in the currant-exporting business; a very agreeable, bright family. They don't say much about Nico. After a fine lunch they give me a sofa for a siesta; back to town via Alexander Street to Patissia, full of large, palatial apartments. Pass large bronze equestrian statue of King Constantine on pedestal, recently unveiled; expect the Communists won't like it. Back to Plutarchos to write.

"May 9: Dr. Karo came at 10 A.M. to take me for my first visit to the Agora just to look around and see what there is. Meet Shear and Travlos at the museum. Spot a beautiful early Ionic capital with painted decoration — may belong to the Painted Stoa; will surely draw this. Measure and take rubbings of Praxiteles' base! Extra rubbings for Emerson and others. They show me fragments of the marble cornice of Zeus Stoa, but the triglyph of crumbling tufa very disappointing: I thought it was marble! Must try to get down to the site to see the fragments of the cyma. Go to German Insti-

tute in Pheidias Street with Dr. Karo. Meet Kübler, whom I knew at the Kerameikos in 1930. Lunch at the Averoff, where we used to lunch with Brueckners and Kerameikos diggers, Knackfuss, Toni Hess, and others. After a siesta Athenase comes with car and go to American School to get Verna Broneer or someone to go with me up to the Acropolis to see the purple glow; no one available, so go up alone; too much smoke and haze for the 'Violet Crown,' so back to Plutarchos; find invitation to lunch tomorrow at MacVeaghs. Karo will be there also. In the evening after my supper, Stevens called, bringing his collection of pedestals and statues for use in his Acropolis studies! Show him my full-sized portfolios of Rhodes, Stambul Museum, and collection of Ionic capitals. . . .

"May 10: Athenase calls at 9:30 to pick me up for the Agora Museum. Cloudy and showers. Can't draw the early Ionic capital which is in the open courtyard, so I work on the Praxiteles base. To MacVeaghs at the United States legation for lunch. Mr. and Mrs. MacVeagh, Dr. Karo, and young Doreen Canaday. She and her mother were at Chanak two years ago. She is now a member of the Corinth excavation staff; has a new car, gift of her dad, a wealthy Toledo man. Pleasant lunch after cocktails and things. Talk of the Lion of Amphipolis which Mr. MacVeagh helped set up; back to Plutarchos for siesta. . . . Cloudy day, so go to Dionysos theater to have photo taken sitting in high priest's chair. Find same photo chap, who greets me as an old friend. Piet deJong still ill upstairs, send him a 'cheer up.' He has been in bed nearly a week. My new clothes arrive, so now I am fit to join the well-dressed Athenians. Price of return ticket to Stambul by Italian boat, first class, 2,842 liras. Leaves Mondays at 10 P.M. From now on, F.H.B., *economy!*

"May 11: Lovely day, sun shining on the cloud flecks. Athenase to come to take me to the Agora Museum; while waiting I pick up Harold Nicolson's 'Life of Dwight Morrow,' a great man who lived through an interesting period. To the Agora Museum, where I begin on that early Ionic capital, with painted egg and dart on the echinus and the volute painted, not carved, probably an interior order, perhaps from the Painted Stoa, the Pride of the Athenians. It was found outside the Agora area! Dowels top and bottom broken away. Made rubbing and full-sized detail! Finish rubbings and details of the Praxiteles base. Shear appears and suggests that I have lunch with the Agora staff, who meet daily upstairs at noon — all seated around a big table where a simple Greek lunch is served from the kitchen in the building, which is a rambling collection of fairly good houses connected by courts and corridors; all later doomed to destruction when the new museum is built. Pots of flowers and vines everywhere. I meet Homer Thompson. Glad to make his acquaintance. Lucy Talcott, Howland, Travlos, Schweigert, and others. Grand discussions at lunch, Thompson the very efficient head of the



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Agora staff. Photo the winged Nike and some other things in the museum to try my camera. Some time since I have used it. I like the lunch and the company, so I shall go there as often as I can. The lunch today of Musaka, a dish of vegetables, salad, yoghurt and coffee — just suits me." — We are sorry to have this account reach its end as we enjoyed Bacon's informal presentation. — BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

## 1887

After a period of comparative quiet, during which the fountains of information upon which your Secretary relies for the basis of eagerly awaited (?) class notes seemingly dried up, it is a pleasure to announce the drought has been broken by the arrival recently of a dozen or more letters and post cards from those from whom it is always a pleasure to hear. Sol Sturges, now comfortably settled in his Santa Monica quarters, admits that he is improving in health, but adds that "it is so slow that I am likely to be in an insane asylum before the job is completed. I have considerable difficulty in breathing and often feel that I am going to suffocate, which is not a pleasant sensation. Our weather has been fine, but I have been in the house so much that I have really not been able to enjoy it. There is only one Tech man around here that I really know, Homer E. Sargent '98, formerly of Chicago and now living at Pasadena. . . ." We are greatly indebted to Sturges for two fine photos, recently received, showing him in his very attractive Santa Monica environment. To judge from appearances Florida must take a back seat to California as a rejuvenating resort, for it looks like anything but an invalid who is wearing a smile of contentment in the picture which has all the outward earmarks of him who answers to the above name. More power to him, say we, speaking for the grand old Class of '87.

From W. D. Sargent at his winter home at Miami Beach, Fla., the following letter was recently received: "It is very hard luck that Boston is not on the route which I take from here to Canada each June. A detour would involve too much planning; then, too, traveling does not agree with my health very well, and I do as little as possible. It would give me great pleasure to greet again those few classmates whom I remember, but it does not seem possible." It was with great regret that we learned of our classmate's inability to meet with us this year.

A letter recently received from Oscar Nutter is of such reminiscent interest as to warrant its inclusion *in toto* as furnishing "a thought for the day" (with apologies to Uncle Ezra): "I received a card from you some few weeks ago but have not replied, as I had nothing of importance to say. Even so, a note from an '87 man should produce a reply of some sort. But little real excitement has come into my life during the last 52 years. For 45 years I was with one company. I saw the textile-machinery industry grow from a modest position until it reached a high

peak. I assisted in sending cotton-mill machinery all over the world, and saw those countries produce their own cotton goods and thus cut off American exports. I also saw this country so well filled with cotton machinery that one-third or more of it had to be scrapped in order for the rest of it to be of use. I have seen laborers so hard to secure that the raw recruits from the Near East were eagerly sought for, when they arrived in this country, and now their children are fortunate to get a little work on the W.P.A. At one time I thought I understood high tariff, emigration, foreign trade relations, and so on. Now I understand but little and know less each year. At present, in order not to go to seed too fast, I am connected with a small surgical instrument company and put in a few hours each day there, doing but little and receiving but little, but having a fairly contented mind — only often wondering how long a man's modest savings will last in these strange days. . . . I wish I had something of interest to relate, but the best I can do is to wish that the remaining men of the good old Class of '87 may have comfort, peace, and a contented spirit during their declining years."

It was certainly a pleasure to learn that Blake and Mrs. B. are to spend the coming summer in Newburyport, Mass. Blake, who is now a permanent resident of St. Petersburg, Fla., writes: "We have arranged to leave here May 20 and arrive in Newburyport on the 24th, after spending Tuesday, the 23d, at the New York World's Fair. We expect to remain at Newburyport until about October 1, during which time our address will be 90 Bromfield Street. . . . A few months ago W. R. Thomas told me he had met Cameron downtown. I called at the hotel where Cameron was stopping, but did not find him. . . ."

From our classmate Frederick A. Kendall the following interesting letter was received from Tampa, Fla.: "Your interesting letter of April 22 has reached me here. I went to Washington, where I have spent most of my life, in November, but finding the winter none too kindly there, I came here in mid-February and have been enjoying almost perfect weather ever since. I must be on my way north again, however, and expect to be back in the Bay State soon after the 15th of May. I enjoyed a very pleasant call on Mr. and Mrs. Blake in St. Petersburg. They intend to go north this summer. . . ."

Frank Tripp wrote that he had recently sprained his right wrist, which casualty delayed somewhat the reply to a communication sent him about that time. He is all right again and assures the Secretary that he expects to attend the class dinner, which is very welcome news. Frank says he has been kept busy during the past year introducing the finest dairy milk chocolate with Brazil nut meat — 100 per cent food value and perfectly pure. "It has kept me busy most of the time and also out of mischief," he writes. Here is something to look forward to in the event that Frank brings a few samples for the delectation of his fellows.

Dick Schmidt sent the Secretary an interesting card from Texas where he was attending the dedication of the McDonald Observatory of the University of Texas, which contains the second largest telescope in the world; as a result of this excursion we assume that Dick missed the spectacular grain elevator explosion and resultant fire in the old home town, which occupied the front pages of the nation's press at about that time.

Mrs. Granger Whitney, now back again at Red Oak Orchard after a winter spent in Detroit, writes another of her interesting letters in which she incloses an invitation of the Technology Club of Detroit to a dinner given to President Compton on March 23. The invitation was executed by John Longyear '26, Secretary of the Club, and was a unique and clever piece of work. Mrs. Whitney is deeply interested to get the latest news of Granger's old associates, many of whom she has had the pleasure of meeting.

Mrs. Hollon Spaulding, who, as previously noted in this column, is in charge of the British Apprentice Club in New York City, writes that she has seven thousand British boys who expect to receive answers to letters written from all over the "Seven Seas" and that her hand sometimes suffers from "writer's cramp," as the letters must be written in longhand. She adds: "It is years since I have been in Boston, but sometime in June I intend to go over for a few days on a matter of business. Most of Hollon's friends have faded out of the picture. . . . My life is a very interesting one, but I sometimes feel cut off from old friends, as *all* the time is taken up with these British lads. It is very worth while, though." — NATHANIEL T. VERY, *Secretary*, 15 Dearborn Street, Salem, Mass.

## 1888

William G. Besler, orator and prognosticator, in his letter dated April 10 stated the following: "With the photo of the Class, which I have placed under the plate-glass top of my desk, I have counted noses, and if we can get as many as 12 or 14 at our coming 'Webster Dinner and 51st reunion' on June 4, it will be a nice crowd." We agreed to this but raised the limit to 18 who should be there: Bates, Besler, Bridges, Buttolph, Collins, Conner, Ellis, Faxon, Horn, Hamblet, Holman, Linzee, Runkle, Sjöström, Taylor, Thompson, Webster, and Wood. When those who attended read this, they will know how nearly correct we were.

Everitt Kilburn Taylor has presented to the Rotch Library of the School of Architecture at M.I.T. a large section of his excellent working library of architectural books, including a considerable number of rare and valuable volumes. We hope others will follow his good example and give to the Institute Library books which will be useful to students in any of the many Courses.

Ernest H. Baldwin, Civil during our sophomore year, was reported in our Class Record, published in 1924, as "not heard from; address unknown." We have just been notified by the Register of Former

1888 Continued

Students that he has left Elephant Butte, N.M., where he was employed by the United States Reclamation Service, and is now at 315 South Avenue, Springfield, Mo. We wrote him telling him that as he was half way back to "God's country," he might as well come the rest of the way to our "Webster Dinner" and see some of his old friends and at the same time have the best dinner of his life.

Albert J. Perkins, who came from Newark, N.J., to join our freshman class in 1884 and who is now in Santa Ana, Calif., returned our invitation to our "Webster Dinner" with the notation: "What's the use of aggravating a feller?" and then added, "Joy to you!" — Charlie Stone's secretary wrote that he was to be away till the middle of June and so would have to miss Ned's dinner. — Ted Foque of faraway Wayzata, Minn., wrote: "Remembering the grand time at Marblehead last summer, it is hard to pass up the party at Ned Webster's, June 4, but I think it better not to make the trip at this time. To those who are there, will you convey my regrets and affectionate regards."

Besler and Thompson, the tireless golfers, wanted to have some golf before or after the "Webster Dinner," but we discouraged it for two reasons: First, if before the dinner, we would be too weak from training down for the dinner, and, second, if after the dinner we would be too full to move.

Before coming up to his island home, your Secretary dropped out to Winchester from Cambridge to call on Freddie Cole, beside whom he traveled four busy years at Tech, and found Fred and his charming wife in their beautiful home on the hilly side of the parkway overlooking the lake. Fred is not feeling very well this summer and so decided he had better not attempt to attend the dinner at Ned Webster's. We hope he will feel better now that warm weather has arrived. — Frank Stetson sent us a picture of old Rogers with the side walls half torn down but the steps and columns still standing. We were glad to have this picture showing the passing of this historic building we all loved so well.

Thirty-seven years ago a railroad official in New Jersey decided to revise the rules and regulations of the maintenance of way department and introduced a "stop sign" for crossings, consisting of a disc, 15 inches in diameter, painted red with STOP in white letters. After years of discussion and experimentation the above-described signal was adopted in 1914 by the Central Railroad of New Jersey, and when the World War came on, this disc, painted white with black letters instead of red with white letters, was adopted by the safety committee of the Federal administration and was enforced as standard upon all railroads. Today it is in use by every railroad throughout the United States. Our classmate, W. G. Besler, was the railroad official who originated this idea and carried it through to a successful finish. — BERTRAND R. T. COLLINS, *Secretary*, Chebeague Island, Maine.

## 1889

Albert Sauveur, who, until his death in January, was professor emeritus of metallurgy and metallography at Harvard, has been awarded the medal of the Franklin Institute. The posthumous award to Dr. Sauveur recognizes his contributions to metallurgy which "have been in a large measure responsible for changing the heat-treatment of steel from an art to a science." — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston, Mass.

## 1891

Hanington wrote Barney from Denver recently: "... Members of the Class are all approaching old age, sorry to say, but it is a fact. I had an attack of pneumonia on February 20 and have been on this job for only a week or so. Takes so long to get back to anywhere near normal. ... I have a little pep and still must rest part of the afternoons. ... This summer, on account of the two fairs, some of our Class may be passing through Denver, and I hope if they do they will make their presence known to me, so I can show them some of our beauty spots. I am afraid finances, and so on, will keep me from going to either, and I would not get much pleasure as I have always been able to walk all day long and now I hobble about with a stick and am good for only a block or two. Old age again and arthritis. If you have a gathering this spring, remember me to the crowd. I hear once in a while from Putnam. He was one of that bunch who lived around Chester Square, and I saw a good deal of him. ..."

A letter from Charlie Garrison to Barney from Santa Barbara, recently received: "Easter Sunday we drove with Marg to Richmond, taking the ferry to San Quentin, passing the grim prison which held Mooney for so many years (by the way, he is visiting in Santa Barbara), and we drove to the Coast. It was a fine day and we skirted the ocean as far as Russian River. This stream is a great summer resort. We lunched in the woods above the river and then returned to Berkeley through Sebastopol and Petaluma. The trip was 205 miles. April 12 we left for Santa Barbara and had a good ride home, eating our lunch in a park at Paso Robles. I was up to my old tricks — our total time going up was seven hours 54 minutes; coming back, seven hours 53 minutes. Bob has sold his house in San Marino and is building another nearer the Huntington Library. ..."

"On April 30 my cousin Oswald Villard and his wife called to see us, so we had a small luncheon party at La Cumbre Golf Club. He has just written his autobiography, which is most interesting, called 'Fighting Years.' For many years he was editor of the New York Evening Post and the Nation. He came again Tuesday, and we drove him to the Ojai [Ventura County], where he spoke at a boys' school, on 'Presidents I have Known.' We have been reading aloud some interesting musical books: 'Music Is My Faith' by David Mannes, who married Walter Damroch's sister. The spirit of the book is fine, and

he has done much for the people of New York City in concert work. Then 'My Wife and I' by Sidney Homer, both of Boston. She is the great contralto of opera fame. We have just finished Pearl Buck's last book, 'The Patriot,' exceedingly interesting, bringing the Japanese-Chinese War down to the present time.

"On May 11 we drove some friends to see Lake Sherwood, a beautiful piece of water in the mountains between the inland and coast roads, 60 miles from here toward Los Angeles. One of the party was Bert Kimball's sister, Evelyn Richmond. I just had a postal from Ernest Hersam. He finished his Mexican trip and was in St. Augustine, Fla., and he will work up the coast slowly until he reaches his nephew at Stoneham, Mass. ..."

F. Clouston Moore wrote Barney last March from Tucson, Ariz.: "Many thanks for your kind letter of birthday greetings. It reached me here in Tucson where I am staying a few months to avoid a recurrence of my difficulties of the last few years. My sons are well and thank you for your good wishes. One is located in Pittsburgh with a steel mill; the other at Seattle. I don't travel as much as I did. Probably I kept on the move too much for my own health. But I still get to Boston occasionally." Clouston showed up in Boston in May and spent a week or so with his sister at Longwood Towers, Brookline, which happens to be where your Secretary resides. We had a call from Miss Moore, inviting us to dine with them in her apartment, which we were much pleased to accept, and the four of us spent a most enjoyable evening together. Of course the male members of the party spent most of the time reminiscing and checking up on our friends in '91. It happened that the party was on my birthday, which did not detract from my enjoyment of the occasion. We can't fool each other much on our ages. Clouston has had a long siege, and is much thinner than when I saw him last. We would like to have driven out to see Barney, but it did not work out, and the telephone had to serve. Barney checks up on me every Sunday morning, and he gets out to church quite regularly. If the weather warms up a little, he will get out on the lawn.

A request for subscriptions to our two class funds brought the usual generous response and a few notes. Walter Hopton wrote from Syracuse: "We are looking forward to a visit from May (Mrs. Aiken) and Dan next month while they are on their way to Webster Lake. The date has not been determined. I have not seen any of the boys since I wrote you last but had a nice letter from Frank Lovejoy at Christmas. He wants to arrange a date when we can get together. This has been a long drawn-out spring, with its attendant colds and inconveniences, and I shall be glad when we can have a few days of sunshine. Lester Charles Hopton, Jr., is two years old ... and is a fine, healthy, active boy. We hope to see him in about a month. We are expecting to be at Webster Lake,



1891 Continued

June 9 to 12, when I make my annual business trip through the eastern part of the state and will make a report to you."

Ed Smith wrote from Pawtucket: "Your fund report of the 17th is a not unwelcome reminder of my duties to '91, of our genial Secretary, and of our faithful Assistant Secretary. Am glad that Barney is as comfortable as he is, although sorry that his activity is curtailed. His contribution to the Alumni Fund is observed with respect and admiration. As Christ said of the widow who cast in her last mite, so shall it be said of Barney that he has done more than all of us together, for what he has given is loyalty and unquenchable class spirit and alumnus spirit of which the cash is but a symbol. With all reverence and sincerity may I say: God grant that Barney's spirit upholds him unfailingly to the end; as it will continue to the end of our days to inspire those of us who outlive him. Give my best regards to Barney. Accept sincere regards for yourself. Until we meet again, adieu and au revoir, which is linguistically redundant but fraternally inadequate."

Arthur Alley sent greetings from National City, Calif.: "Please extend my best wishes to Barney. He certainly is a wonder — physically, mentally, and spiritually — and an example of courage that the rest of us can profitably follow. I was glad to have had the chat with you when you were in Los Angeles. . . . Remember me, please, to other members of the Class whom you may meet. I miss their association." — Steve Bowen also wrote and mentioned the trip he and Lin Damon took to Barbados on one of the Canadian National *Lady* boats, which they greatly enjoyed. — Blair and your Secretary attended the annual convention of the National Fire Protection Association in Chicago in May. Gorham Dana usually attends these meetings but did not go this year. The last time it was held in Chicago, Jim Swan was there, which made a '91 quartet. A number of Tech men, interested in fire protection, attend these meetings which started over 40 years ago, but the old guard is thinning out. John R. Freeman '76, L. Henry Kundhardt '89, Edward V. French '89, Ralph Sweetland '88 were before '91. French is still active as president of the Arkwright Mutual of Boston, and it is reported that Sweetland will retire from business shortly; Freeman and Kundhardt are no longer with us.

The following addresses have been received: George W. Vaillant, Washington, Conn.; William H. Adams, Newark, Del.; William H. Punched, 30 Brookfield Road, Waltham, Mass. — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I. BARNARD CAPEN, *Assistant Secretary*, Early Convalescent Home, Cohasset, Mass.

## 1893

Albert Gould Davis, patent lawyer and former Vice-President in charge of patents of the General Electric Company, who was active in a number of important

patent cases which were carried as high as the United States Supreme Court, died at his home, 550 Park Avenue, New York City, on April 25. He had been ill with pneumonia for about a week, but had been in poor health for the past year.

Following his graduation from the Electrical Engineering Department with our Class, Davis was, for a year, engineer for the Davis-Cclby Ore Roaster Company, and for two years was an assistant examiner in the United States Patent Office at Washington. During the latter period he studied law at the National University, where he was graduated with the LL.B. degree in 1896 and received his master's degree in law a year later. Davis entered the practice of law in Washington in 1896 and at once began to handle patent work there for the General Electric Company. His services for the company attracted the attention of the late Frederick P. Fish, the veteran patent lawyer of the old Thomson-Houston Electric Company and later of the General Electric Company, who for years was an active and valued member of the Technology Corporation. The result was Davis' appointment in December, 1897, as manager of the General Electric's patent department and his removal to Schenectady. For more than 35 years he was in that company's service, having been made vice-president in November, 1919. He resigned on May 1, 1933, to join the law firm of Pennie, Davis, Marvin and Edmonds in New York. The firm specialized in patent work and included his younger brother, William H. Davis. In 1937 he left the firm to practice independently at 30 Rockefeller Plaza.

Davis was active in the proceedings by which the Marconi Wireless Telegraph Company of America acquired assets and patents from the United Wireless Telegraph Company, a subsidiary of Marconi's Wireless Telegraph Company, Ltd., of England. These patents and assets were purchased later by the Radio Corporation of America. Davis became a director of R.C.A. shortly after its incorporation in 1919, a position which he held until 1932 when he, Gerard Swope '95, and other officers of the General Electric Company resigned from the board of the Radio Corporation at the direction of a court order dissolving the two companies. Prominent in his profession, Davis was serving as president of the New York Patent Law Association at the time of his death. He was also a fellow of the American Institute of Electrical Engineers and a member of the American Bar Association, the New York State Bar Association, the Association of the Bar of the City of New York, the American Patent Law Association, and the national council of the National Economic League. His clubs were the Bankers, University, Adirondack League, and Fishers Island of New York; the Mohawk and Mohawk Golf Club of Schenectady; and the Garden City (Long Island) Golf Club.

He was born in Brooklyn, N.Y., October 19, 1871, the son of Owen Warren Davis, Jr., and Abby Gould Davis. In

1898 he married Agnes H. Shaw of Washington. She died in 1929, and he married later Mrs. Pauline C. Lunt of Schenectady. She survives, as does a daughter by his first wife, Mrs. Van Ness Philip, and three grandchildren. In addition to William H. Davis, Albert was a brother of Owen Davis, playwright, Harold T. Davis of Nevada City, Calif., Colonel Robert Davis of Los Angeles, and of the Misses Mary Gould Davis and Perley V. Davis of New York. Following funeral services at his home, burial was at Schenectady.

Mrs. Edith Rogers Holden of New York City, widow of Lansing C. Holden, architect, and Laurence J. Webster of Holderness, N.H., and Boston, were married on the 29th of April. The ceremony was performed in the bride's apartment at 14 East 60th Street by Rev. Dr. Henry Evertsen Cobb. The bride's daughter, Mrs. G. Wight Cooke, and the bridegroom's son, Frank G. Webster '28, were the only others present. After a short trip the couple plan to live at Holderness. The bride is the daughter of the late Mr. and Mrs. Thomas S. Rogers of Boston. Our classmate, Laurence Webster, who was formerly with Stone and Webster and who retired from business some years ago, is the son of the late Mr. and Mrs. Frank G. Webster of Boston.

The following changes of address have been received: Hereford Berry, 3756 Linden Avenue, Long Beach, Calif.; T. Morris Brown, 42 South Walnut Street, East Orange, N.J. — FREDERIC H. FAX, *Secretary*, 11 Beacon Street, Boston, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 551 Tremont Street, Boston, Mass.

## 1895

During the spring meeting of the American Society of Civil Engineers, at Chattanooga, Tenn., the newest technical division — hydraulics — started with the third largest membership, 1,800. A full day's program was inaugurated before a crowded hall. In one of the outstanding papers, Gerard H. Matthes, principal engineer, Mississippi River Commission, made a plea for field study of hydraulic phenomena — or "observational hydraulics," to differentiate it from experimental hydraulics on models. Field technique is almost nonexistent and needs development, he said. Since it is difficult to get funds for testing facilities after a structure has been built, Matthes stated that the time to provide for hydraulic observation is at the design and cost-estimating period.

The New York committee for the "45th" reunion of the Class, at this writing, was planning to furnish an interesting and entertaining program. This reunion was set one year in advance of the regular time in order to give those attending an opportunity to visit the New York World's Fair. The reunion dates were Saturday and Sunday, June 10 and 11; headquarters were in Bronxville at the Gramatan Hotel. The November issue of *The Review* will contain a detailed report of the occasion. Those responsible for the program were Fred B.



1895 Continued

Cutter, chairman, assisted by Azel Ames, Arthur L. Canfield, John H. Gardiner, John D. Moore, Gerard Swope, and Thomas H. Wiggan. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass. JOHN H. GARDINER, *Assistant Secretary*, Graybar Electric Company, 420 Lexington Avenue, New York, N.Y.

## 1896

Some angel always seems to come to the rescue of the Class Secretary when things look dark and when material for class news is scarce. The angel at this time is Joe Stickney, from whom a letter arrived just as the Secretary had gathered his material together to dictate these notes. Joe reported that he had been present as an invited guest at a testimonial dinner given on May 22 to J. Lloyd Wayne by the employees of the Indiana Bell Telephone Company on the event of Wayne's 65th birthday and his compulsory retirement from the service of the company. At least 200 of his associates were present, and Joe says that it was really a wonderful testimonial, where lots of nice things were said about Wayne and many useful and beautiful gifts were presented to him, accompanied by more or less humor. The report does not state whether any of the gifts were of a domestic nature which would lead one to gain any idea that Wayne was contemplating matrimony. Joe said that Wayne was planning to be in Cambridge for Alumni Day, June 5, but no formal word has come from Wayne himself to that effect (May 26). The Secretary will be able to report in the next issue whether or not Wayne materialized. Another item of particular interest to Tech men is that on May 24 the local Indiana Tech Club held a dinner for Wayne. He is past president of this Club and past honorary secretary of M.I.T. for Indianapolis, and for years has been the pillar of the Indiana group.

As for Joe himself, he made a definite promise to be in Boston the first week of October to attend the convention of the National Trade Association, in which he is interested as a part of his commercial job of insurance. In addition to running the Stickney insurance agency, Joe has taken a leading part in the affairs of the Indiana Athletic Club and at the present time is in his eighth term as president of the club. A little booklet gotten out by the club tells of its activities and of Joe's work and gives recent pictures of him which show some changes from the picture which appeared nearly 45 years ago in the '96 class portfolio.

Classmates will be interested to know that the recipient of the class scholarship, Francis Lee, the son of our classmate Marion Lewis Chamberlain Lee, will be finishing his course at M.I.T. this year with high honors, and will be interested to know also of the expectation that the scholarship next year will be awarded to John Tyler, the son of Lucius S. Tyler.

A recent letter from Arthur Baldwin in Paris did not really contain much in the way of news about himself but did give some of his impressions on the situation in Europe. — Admiral Bakenhus was in

Boston on May 15 to attend the meeting of the Visiting Committee for the Department of Mathematics, and the Secretary had the pleasure of a short call from him that day. He reported that at a meeting of the New York City post of the Society of American Military Engineers on May 12 he had given an address on the subject, "The United States Navy in the Present Situation." Bakenhus said that when he was in Washington the latter part of April, he had the good fortune to see Billy McAlpine, who is now senior civil engineer in the offices of the chief engineering of the War Department. Bakenhus says that he had talked with a good many engineer officers and they all have a very high opinion of McAlpine. The job which he holds is an important one and he is handling it well.

The Secretary has had the pleasure of seeing Marion Lee occasionally during the past winter, as she is now residing on Memorial Drive, quite close to M.I.T. He has also received from her a letter expressing her sad feelings at the sight of the old Rogers Building being razed. The Secretary, himself, has very carefully avoided Boylston Street this spring as he preferred to retain the memory of old Rogers as it stood rather than any mental picture of it in the process of demolition.

Announcement from Lehigh University has a reference to Bradley Stoughton, who, according to the announcement, is relinquishing, under the age ruling of the board of trustees, his administrative duties as dean of engineering, but he will continue, for a while, his teaching duties as head of the department of metallurgical engineering. — Herman C. Lythgoe had a very interesting exhibit of his highly artistic European photographs at the meeting of the Northeastern section of the American Chemical Society in the rooms of the American Academy of Arts and Sciences in Boston on May 12. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

## 1899

Our 40th reunion will have passed into history when this issue reaches you; the first autumn number of *The Review* will carry a full account of the festivities.

Today I have just heard via Frank Fowle that Dwight Farnum of Temple City, Calif., has recovered from a siege of bronchial pneumonia and, though the doctors pronounced him cured, he will not be able to be with us at the reunion. The only two classmates he has been in touch with are Sylvester Q. Cannon of Salt Lake City and George E. Lynch of Los Angeles. The latter, he says, has perfected an excellent system of dust control which is quite successful. — Lew Emery, I am glad to report, is much improved in health since the last column went to press. At that time he was in Johns Hopkins in Baltimore. Now he is in Atlantic City recuperating and will be glad to see us one and sundry if and when we get that way.

Bassett Jones, whose name is much in the news these days, is said to be more responsible for the way the New York World's Fair looks at night than any other one person. He is the consultant on illumination to the board of design and chairman of the committee on display. He and his staff originated and designed the two main lighting displays at the Fair. The displays must be seen to be appreciated — many of you no doubt have seen them. Perhaps you didn't know who was responsible, but now you do. In addition, Jones has created a lighting system whereby trees are lighted from the ground by capillary mercury tubes in such way as to make the trees luminous. Fears have been expressed that this innovation will astonish the Luna moths on Long Island and make the Flushing birds uneasy. Jones planned the lighting of the Freer and the Corcoran galleries of art in Washington, and of the Soldiers Memorial in Pittsburgh. Next to the World's Fair his biggest illuminating assignment was doing over the street lighting system of Syracuse, N.Y. He was consultant to Miss Adams for the illumination of "Peter Pan" and other plays. He planned lighting effects for the Washington Square Players and the early *Beaux-Arts* balls, including the famous Venetian Pageant and Ball of the Gods.

In addition to this "lighter" side, Jones has many other theories and interests. He is suspicious of too much sun, and in this he would be ably supported by Burt Rickards, who warns vacationists via radio and post, from the state house in Albany, N.Y., to beware of too much sun in too large doses too early in the season. These are not all of Jones's interests or diversions. He has concerned himself with investments and the quick freezing of food, and he has written of economics of which I will tell you more in a later issue. He has fathered in his Nantucket nurseries thousands of black Japanese pines — a species that enjoys a salty gale and rides out violent northeasters without turning a needle. During the hurricane last September the trees that were not washed away suffered no damage. His pet peeves are Nantucket deer which damage his pines. He was not content to suffer their depredations without protest, so he studied the Massachusetts law and found an old statute which holds that one can bill the state if deer damage one's property. To date the Massachusetts Department of Fisheries and Game is out over \$500 in damages. Jones now has the right to shoot deer trespassing on his land.

In May the Technology Club of Chicago held a smoker at the Hotel Sherman which was very well attended. From Frank Fowle, who is active in Tech matters, I heard that new members among the younger element were taking a surprising interest. One of the speakers was Dean Lobdell '17, who told how candidates for admission to Tech are now being selected.

Vacation time is upon us and I am expecting everyone to drop me a note during his vacation journey, as well as to write

1899 Continued

me a summary on his return home. This will be an easy way to get items for The Review. — W. MALCOLM CORSE, *Secretary*, 1901 Wyoming Avenue, Northwest, Washington, D.C. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston, Mass.

## 1901

In the June Review mention was made of the fact that a bad case of the gripe prevented your Secretary from preparing any class notes for the May issue and that, consequently, a number of news items had accumulated. These will now, as an old parliamentarian friend of ours used to say, be chronicled "seriatim." Bill Pepperell wrote from Greensboro, N.C., where he is director of the engineering and purchasing departments of the Burlington Mills Corporation (primarily weavers of rayon fabrics, said to be the largest of the kind in the country), that the company had recently acquired an interest in several full-fashioned silk hosiery mills, as well as a silk throwing plant, so that there has been plenty of worth-while constructive work to keep him busy. He should, however, be well caught up long before time to make up his mind to attend the 40th reunion which is now only two years away.

Perk Parrock has sent us a cordial invitation to attend the famous Exposition which opened on Treasure Island in San Francisco Bay in February. Perk wrote enthusiastically about the Exposition, and we wish that we could be among those present but judge that we will have to be satisfied by making several visits to our own World's Fair recently opened in near-by New York. Judging from what Grover Whalen tells us, we have good reason to be enthusiastic about that show. However, we wish we could go to San Francisco also if for no other reason than to renew friendship with Perk and our other friends on the Pacific Coast.

We have recently had a letter from Bill Farnham, one of our fortunate retired members, who has been spending part of the winter out in Pasadena, Calif., and who wrote that before he went to Tech he had attended Brown University with Hal Kennedy, whose death was referred to in the February Review. Bill and Hal took the same Course at Tech. Afterward they both joined the Bell Telephone system and for a number of years brilliantly filled important administrative positions in near-by offices in New York City. Bill described Hal as the kind of friend whom we most hate to lose, and we may, therefore, be certain that he had not changed at all in that respect since the days when we knew him at M.I.T. — Ed Church, who has been chronicled as E. Fayette Church, Jr., on the records at the Institute, and who for a number of years has been professor of mechanical engineering at the Polytechnic Institute of Brooklyn, writes that that institute is constantly growing bigger and better, so that those New Yorkers who can't arrange to go to M.I.T. can secure the best possible education right in their home town. — Ted

Lange recently made a visit to Hartford and happened to strike town during the week when your Secretary was laid up with the afore-mentioned bad case of the gripe. Ted came out to the house to see us. The visit was much appreciated, for about that time we had almost reached the point where we were afraid that we might pass out and also that we might not be successful in that respect. However, Ted cheered us up and probably did us more good than the doctor.

Robert White, Jr., wrote that he and his wife went to Scotland last fall. We quote from his letter: "Spent four months in Scotland and England; saw a large part of the British navy assembled in the North Sea and had a close-range view of shipbuilding activities on the Clyde and the Tyne. Saw hundreds of new housing developments and visited many industrial centers. Enjoyed Birmingham especially, where they make everything from pins and needles to firearms and railway cars. Cadbury's candy plant there, employing 8,000, takes half a day to go through — with a village for its workers — and is the best thing of the kind I've seen anywhere. We saw them digging trenches in the parks and assembling gas masks in the factories. Then a month in London, and a trip back on the S.S. *Queen Mary* — back to where, by contrast, the homes and hotels are well heated." Evidently, therefore, Bob was glad to be back in the U.S.A. and, after all, perhaps that is the best reason to take a foreign trip, so that we may the better appreciate our own country. Incidentally, we have recently seen a newspaper clipping which stated that T. F. McGann and Sons, which is John McGann's company, had recently been awarded a contract for 13 bronze plaques to be placed in the wall inclosing Paul Revere Mall, formerly known as the Prado, at Hanover and Unity Streets, Boston. The funds for this contract were left by George Robert White, who, we believe, was an ancestor of our own Bob White, Jr. — The Alumni Office has recently sent in a news item to the effect that a mountain in Vermont has been named in honor of our classmate Allan Rowe. This mountain, Mount Rowe, 2,460 feet in height, is on the border line between Barnard and Bridgewater counties, Vermont, and the lookout on its summit is nine miles from Woodstock, Vt., where Dr. Rowe lived and worked during a large part of each year in the later years of his life. The Alumni Office also quoted a eulogy about Allan from the President of Norwich University, as follows: "In him were combined in a finer and greater degree every quality of broad character, scholarship, sportsmanship, leadership, and human understanding of the individual and general needs of an educational institution than in any man whom I have ever known." We shall always miss Allan, and our reunions can never be the same without him.

Each year about a month earlier than this time we look forward to reading about the dinner of the Gridiron Club at Washington, D.C., and this year it was interesting to note that Lammot du Pont

was among those present. Lammot continues to be mentioned in the public press because of his talks on various occasions, and the last reference seen was of his talk before 150 businessmen at Baltimore, Md. At that time he very truly stated that "the demagogue who attacks industry attacks not only the corporation but the employee as well."

Ralph Whitman, who was mentioned in the April Review as now being located at the United States Naval Operating Base at Norfolk, Va., has just written to describe the operations of the "Statutory Board on Shore Stations — 1938" known commonly as the Hepburn board from the name of the senior member, Rear Admiral Hepburn, United States Navy, formerly commander-in-chief, United States Fleet. Ralph was one of the five members of this board from July 15, 1938, to March 28 this year, and states that the reports of the board are expected to form the basis for programs and Congressional appropriations for a number of years to come. As a member of this board Ralph had to travel more than 20,000 miles by train, air, and auto and, judging from what he stated, is now glad to be returned to regular shore duty.

Paul Hilken, whose recent purchase of a modest country estate near Willimantic, Conn., was mentioned in the June Review, now gives his full address as Meeting House Hill, North Franklin, Conn., telephone Lebanon 32-13. Paul writes that that is a seven-party line but that it is rarely in use, and we have an idea that he will be glad to have his friends test the truth of that assertion, then to arrange for making a visit to his new home. — Fred Clapp, our peripatetic classmate, since his return from Iran and other eastern points, has apparently not been happy in staying put in one place, for he advises that he has recently been on a tour of six weeks through mid-continental and southwestern United States. Evidently, therefore, it must also be worth while to study the geology of our own country. Fred has recently sent us a copy of one of his addresses, entitled, "The Problem of Petroleum," which is most interesting and of which we believe that Fred would be glad to send a copy to any classmate who is interested. — Bill Vermilye, to whom reference was made in the June Review relative to several of his interesting talks which have been published, had an article, entitled, "Sincerely Yours — The Boss," in the New York *Herald Tribune* magazine section for May 7. This article was along lines similar to the piece entitled, "Human Understanding in Industry," and is well worth reading and study. He again emphasizes the fact that bulletin boards as a means of addressing the workers of a plant are being abandoned by progressive managements, the thought being that other means of communication between the management and workers should prove psychologically much less liable to cause friction.

Bob White also wrote that during a recent visit to New York he attended the convention of the Greater New York



## 1901 Continued

Safety Council and there heard an address by Al Sulzer, who is vice-president of the Eastman Kodak Company at Rochester, N.Y. Bob's report of the address sounded so interesting that, as we learned it was printed, we sent for a copy, which very completely traced the development of safety film for the moving picture industry and for other purposes. A copy of this address may be purchased for ten cents in stamps sent to the Greater New York Safety Council, 60 East 42d Street, New York City. It is well worth reading, and in addition to describing the development of safety film, it describes all known methods for handling most safely all kinds of photographic film.

The Alumni Office has sent us the following addresses: P. Freeman Goodwin, Post Office Box 199, Bedford, Mass.; David H. Cowell, 11 Kent's Lane, Hingham, Mass.; John R. Brownell, 112 Rutgers Avenue, Swarthmore, Pa. — ROGER W. WIGHT, *Secretary*, The Travelers Fire Insurance Company, 700 Main Street, Hartford, Conn. WILLARD W. Dow, C.P.A., *Assistant Secretary*, 20 Beacon Street, Boston, Mass.

## 1903

The only news item that has come to the Secretary's attention during the past two months is one concerning Frank B. Jewett, who was awarded the John Fritz Gold Medal, for scientific leadership and promotion of research, by the American Institute of Electrical Engineers. Dr. Jewett was selected because of his "vision and leadership in science, and for notable achievement in the furtherance of industrial research and development in communication." We are proud to have him a member of the Class and are glad of his success in his field of work. He is president-elect of the M.I.T. Alumni Association.

Your Assistant Secretary has watched with feelings of regret the gradual disappearance of old Rogers during the past two months. At this time (the last of May) there is little left but the foundations and a host of memories. As we walk by we remember the many hours we spent there, under the expert freehand drawing of Charles L. Adams '84, the biting sarcasm of Professor Faunce, the pleasures of economics with Professor Ripley '90. We raced over modern Europe with Professor Currier, we learned from Homer Albers what constituted a contract, and learned to appreciate beauty of English poetry with Arlo Bates. In Huntington Hall, also, we met some of the best-known Americans at Dr. Pritchett's noonday conclaves, and we fought battles with Lieutenant Hamilton over the platform during our freshman year. We also remember the library, the bursar who saw us at least twice a year, and the polite but terse invitations of Dr. Tyler '84: "Please see me in regard to . . ." — all a pleasure to remember now but very real and serious when they were experienced. We'll never forget them.

Before these notes will appear Alumni Day will have passed. This being an off year for us, no formal reunion will be

held, but about a dozen of us have already planned to dine together Saturday, June 3, and we will tell you about this in our next issue. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 441 Stuart Street, Boston, Mass.

## 1907

While the item cannot be called hot news, classmates will be interested to know that Jim Barker, Treasurer of Sears, Roebuck and Company, and his wife sailed in October to Naples and Port Said, spent a few days in Egypt, and then flew by Imperial Airways up the Nile to Kenya and on to Victoria Falls and Cape-town by South African Airways, returning by sea via Southampton to New York — 28,000 miles in 60 days. This was purely a vacation trip, and by flying they gained time enough for a good deal of exploration and animal photography as they stopped at various places en route.

The *Mining Journal* of April 15 contained the following announcement: "Joseph Samuel Coupal was named as the first director of the Arizona State Department of Mineral Resources at the organization meeting of the department's board of governors, held in Phoenix, Arizona, April 7 and 8. For the past year Coupal has served as field secretary and organizer of the Arizona Small Mine Operators Association, the organization which was largely responsible for the creation of the new state department by the 1939 legislature. Coupal, a graduate of Massachusetts Institute of Technology, class of 1907, has been engaged in mining operations in many parts of the United States, Alaska, and Mexico, both on company and personal account. For several years immediately preceding his present work he actively directed the operation of several small mines in the Octave and Tip Top districts of Yavapai County. Through his work with the Arizona Small Mine Operators Association he has made many friends among the small operators and gained a wealth of information as to the mining resources of the state. This information will be of infinite value to him in organizing the activities of the new department." — Congratulations to you, Sam!

All '07 men will rejoice with me to learn that Ralph Crosby (see The Review, May) received in early May, from the governor of Illinois, an appointment as junior engineer in the state department of public works and buildings, division of waterways, at Springfield, Ill. . . . A brief, but thoughtful, note dated April 29 came from Andre Kolatschevsky, giving a new address as Avenue de l'Art Flammand 61, Antwerp, Belgium, and saying: "With kindest regards and best wishes to you personally and to the good fellows." (See The Review, February.) — In the Boston *Herald* of May 14 was announcement of the engagement of Donald Brown Prouty, son of Ed Prouty of our Class, to Miss Carey Elizabeth Tatro of Millbury, Mass., the wedding to take place this month. Donald is a graduate of the Middlesex School in

Massachusetts, and a member of this year's graduating class at Harvard. His clubs are the Hasty Pudding-Institute of 1770, the Varsity, and Fox clubs.

According to the *Christian Science Monitor*, Boston, March 21, Frank C. Stockwell was appointed dean of the graduate school of Stevens Institute of Technology at Hoboken, N.J., on March 18. Graduate courses leading to the degree of master of science were given previously under the direction of a faculty committee on graduate instruction, of which Frank was chairman. He became an instructor in physics at Stevens in 1907 and has been a member of the faculty of the department of electrical engineering since 1910, being head of that department since 1925. He is married; has one daughter, 26 years old; his home address is Colonial House, Castle Point, Hoboken, N.J. — Dennie '11 reports that Charlie Allen was elected a trustee of the Worcester Natural History Society at their annual meeting.

In the November Review was a statement regarding the interest of Bill Woodward in raising tomatoes without soil. Now we have a letter from Bill, written in response to the earnest solicitation of the Secretary, that tells more in detail of this fascinating activity: "I have always been interested in growing flowers. I think we all have a deep-rooted instinct that way. But in my experience, due to varying soil conditions and difficulty of control, I never had the same success. So two years ago I tried to find out something about chemical agriculture. There was very little information available in New England, so I went to California to get firsthand information where the work started. I found them very open and helpful in California, and I got all the dope I wanted. Then a year ago I built a greenhouse, about 80 feet by 30 feet, here on Bass River [in South Yarmouth, Mass., Bill's home] and went to work. I have had wonderful success, with almost no trouble at all. I screened the greenhouse and have kept all the bugs out. My second crop of tomatoes this past winter brought record prices in Boston — some of them as high as 75 cents a pound. The tomatoes are better in color, shape, taste, and keeping qualities, can be picked ripe and kept for weeks.

"The cost of production is much lower than growing in soil and the plants grow very sturdy and tall; I believe that greenhouse growers will have to come to it on cost alone, to say nothing about quality and taste. After fooling with it for a year I can't help feeling that the wonder is not that it can be done in chemicals, but that you can get anything to grow in soil. For example, plants require one part zinc in 20,000,000 of water to grow at all, while 10 parts are toxic. How can you get it in the soil? Here we can keep the solution in perfect control. It is very fascinating work, and I am growing flowers as well as many kinds of vegetables, also melons, berries, and so on."

It was with real satisfaction that on May 23 we received a letter and information from Albert H. Donnewald, from



## 1907 Continued

whom we have not previously heard directly since 1907. For four years following graduation Albert was successively with Great Bras d'Or Mining Company, Eddy Cannon Mining Company, and Democratia Mining Company as superintendent, and then from 1911 to 1916 was in business in St. Louis, Mo. Two years as superintendent of the Santa Barbara Mining Company followed, and in 1918 Donnewald became civil engineer with the Prairie Pipe Line Company, remaining there until 1932, when he became superintendent of trunk and gathering lines of the pipe-line department of Sinclair Refining Company, the position he now occupies. His business address is American National Bank Building, Shawnee, Okla., and his residence is 630 West Wallace Street, Shawnee, where he lives with his wife. There are no children.

Albert writes: "To me, my work has been extremely interesting, particularly since I entered the business of transporting crude petroleum. I entered the employ of the old Prairie Pipe Line Company just 21 years ago, when this company was expanding. At that time engineers were considered a necessary nuisance, the better positions being held by old practical heads who rose from 'ditch,' after the manner of the railroaders who rose from the section gang. Pipe-line engineering started to advance about 20 years ago, and I am glad to say that I was able to witness its growth and play a part in it. All the progress in this science has been made in the last 20 years, and in the last five years the engineers have forged to the front. I do not meet many Tech men in these parts, and outside of John Leavell, whom I saw some years ago in Tulsa, I have never run across any old classmates. I can say, though, that I have not lost interest in M.I.T. or '07, even though my interest might seem somewhat dormant. So please convey to all the boys my very best regards." — BRYANT NICHOLS, Secretary, 126 Charles Street, Auburndale, Mass. HAROLD S. WONSON, Assistant Secretary, Commonwealth Shoe and Leather Company, Whitman, Mass.

## 1909

Reunion returns from classmates brought the following information: John Willard was unable to be with us on June 3 on account of the marriage, that day, of his daughter, Marion, to Leslie M. Bell. Dr. Bell received his bachelor's degree from the University of Alabama, his M.A. degree from the University of California, and his M.D. from the Harvard Medical School. — Mr. and Mrs. George Wallis have announced the engagement of their daughter, Frances, to Addison T. Sandford of Ware, Mass. Frances is a graduate of Connecticut College for Women in the class of 1937. Her fiancé was graduated from Manlius School of New York and from Massachusetts State College in the class of 1936. George and Mrs. Wallis at the time of this writing planned to attend the reunion, accompanied by their two daughters — one with her husband and the other with her future husband. — I saw George Reppert in

New York recently; he was unable to attend the reunion because his older boy, George, Jr., was being graduated from Princeton. Young George has been elected secretary of his class for the first five years out of college and has received the Class Medal for having done the most for Princeton in his class. He has also been the business manager of the *Daily Princetonian*. The younger son, James, was graduated from Hill School this year. — Harold Symons, who is a Buick dealer in Cheyenne, Wyo., was unable to be with us on account of the great distance from Boston, and the fact that his daughter, Katherine, was graduated in journalism from the University of Wyoming on June 5. His oldest son, John, now a student at Tech in the Class of 1941, is associated with Sigma Chi Fraternity.

It is with regret that we announce the death of Willard B. Van Inwegan, who was found to have died in his compartment during the passage of the train on which he was riding from New York to Detroit on May 4. As chief engineer for the Great Atlantic and Pacific Tea Company for the last 16 years, Van Inwegan had charge of leasing, construction, and installation of major equipment in the company's stores. He was credited with being one of those responsible for transforming many of the company's smaller stores into modern markets. He was on a tour of inspection when he was stricken. Van Inwegan was graduated from Williams College in the class of 1906, receiving an architectural degree from the Institute in 1909. He taught school for a while, later becoming engineer for the department of water supply, gas, and electricity in New York City. In 1914, he went with the Great Atlantic and Pacific Tea Company. He is survived by his wife, a sister, and a brother. Van Inwegan was a descendant of an old Dutch family which settled in New York State in Colonial times. — CHARLES R. MAIN, Secretary, 201 Devonshire Street, Boston, Mass. Assistant Secretaries: PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

## 1910

It is with regret that your Secretary announces the passing of our classmate Milo C. Halsey at Los Angeles, Calif., on May 12.

Your Secretary is always pleased to receive notes concerning all classmates, whether they come direct or through clippings. The following was received from a clipping: "Bradley Jones, professor of aeronautics of the University of Cincinnati, is the author of 'Aerodynamics,' which is in its second edition." — Jack Babcock's son Willard was graduated from Tech this June. He expects to return next year to receive his master's degree. — HERBERT S. CLEVERDON, Secretary, 46 Cornhill, Boston, Mass.

## 1911

At the spring meeting of the American Society of Civil Engineers at Chattanooga, Tenn., with an attendance of more than 1,200, members were treated to a

program built around the engineering activities of the Tennessee Valley Authority. Said the *Engineering News-Record*: "A high light of the opening session was a paper by Theodore B. Parker, chief engineer of the TVA, on the work of his organization. He called attention to the satisfactory progress being made on Hiwasee Dam, which will be one of the highest overflow dams in the world. He also said that preliminary construction work is underway at Gilbertville Dam . . . and that work will start soon on Watts Bar Dam about 60 miles above Chattanooga."

In late April we learned of the passing of another classmate: Jim Johnson, II, who for years had been director of the Essex County Vocational Schools, with headquarters in Newark, N.J., died on April 27 at Newark. No details are at hand. — Johnnie Bigelow, IV, city engineer at Marlboro, Mass., went with me to the committal services for Charlie Barker, VI, at the family lot in that city on April 29. Charlie's mother, his sister, and his brother, who survive him, were present, but of course his widow, still hospitalized, was unable to accompany the body east from Berkeley, Calif. This brought finis to the life and career of a grand classmate.

Harry Tisdale, V, writing right after learning of Barker's death in the May class notes, said that he and Grace had a narrow escape from serious injuries during an early spring automobile swing around his sales territory, covering the Sky Line Drive, the Norris Dam, the Middleton Gardens, and the Cypress Swamps near Charleston, S.C. "On the way back," Harry writes, "about four miles south of Front Royal, Va., we approached a curve to the right on a wet road. I slowed up to about 20 to 25 miles an hour, but just at the curve I touched the brakes again, they locked, and it happened! Down a bank we went from a skid, over a small tree and into a cement post — then down went two sections of fence, and there we were on the other side of this tree, set squarely between two other cement posts as though put there by a crane. Both Grace and I miraculously escaped without injury, and after a three-hour delay, a wrecker had pulled us out and we were on our way again." Harry inclosed a picture taken in the rain and showing the car badly crumpled on the left front, but upright, never turning over or on its side. They stopped, he added, at Charlotte, N.C., and had a delightful dinner and evening with Sam Hayes, V, and his wife. He continues: "Sam is starting to put ten cents a day in the bank, so he will have enough for gasoline, at least, for the trip to our 30th reunion in 1941. He has never been back to one, and I told him he sure would enjoy himself." There's a fine thought for all of us — why not start saving a little each day now so that in June, 1941, we'll have the largest 1911 class reunion in history!

Among the Worcester graduates from various colleges this June is Miss Eleanor Daniels, daughter of Fred, VI, and Mrs.

1911 Continued

Daniels. She was on the freshman honor list at Smith and has since been on the dean's list continuously. Majoring in French, she spent her junior year with the Smith College group in France. She was chairman of Indoor Ivy Day, a feature of Commencement exercises, and was a member of the all-Smith basketball team this year. Fred, by the way, has recently been elected a trustee and chairman of the finance committee of the Worcester Natural History Society.

Jack Herlihy, Emmons Whitcomb, and I attended the annual meeting of the Alumni Council the latter part of May, and were pleased to endorse the report of the Nominating Committee which placed Bill Coburn, I, on the Visiting Committee of the Modern Language Department for two years. — At a Rotary district conference in Webster, Mass., in addition to Johnnie Bigelow, IV, I saw and chatted with Leland D. Wood, VI, superintendent of the municipal gas and electrical department at Norwich, Conn. True to his promise, George Watson, IV, new Vice-President and general manager of McEvoy Company, manufacturers of equipment for the oil-producing industry, Houston, Texas, sent me a copy of his 1939 catalogue, profusely illustrated. It was so interesting and complete that I sent it along to Professor Locke '96 for use by our Mining Engineering Department. — Jim Greenan, III, has shifted his headquarters from Carmel, Calif., to Room 209, 206 North Virginia Street, Reno, Nev., in the midst of his gold interests.

The first fall issue will contain a full account of 1911 on Alumni Day. Best wishes for a fine summer, and please make a notation on your calendar for right after Labor Day to — *write to Dennie!* — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

## 1912

From the *Electrical World* we learn of the recent appointment of Harris E. Dexter, VI, as vice-president in charge of commercial relations of the Central Hudson Gas and Electric Corporation, Poughkeepsie, N.Y. Dexter has been associated with Central Hudson for the past 13 years as general commercial manager. At present he is also serving as chairman of the general sales committee of the Edison Electric Institute. — Your Secretary had a very pleasant visit at the Brookwood Country Club, Chicago, where Jay Pratt holds forth as chairman of the building committee. Jay also keeps a close eye on all other departments of the club. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N.Y.

## 1913

Our master of epigram, Pa Ready, made the remark in a reunion committee meeting: "Tell 'em to wake up for three

days in June, and then they can go back to sleep again." Well, that is what happened. At least that is my alibi for the missing links between the 1912 notes and the 1914 notes. However, our Class Secretary, has money in his "notes" bank, in the person of Edward Hurst, II. Here is Ed's accommodation, in the Winchell manner: "It was thoughtful of you to phone me for a contribution for our class notes. Your loyalty to '13 is exceeded only by the procrastination of your classmates, including the writer. The smart chap who said that hell is paved with the stones of procrastination was guilty of a gross understatement. In my opinion, not only the floor of hell but the walls, ceiling, and all the torturing mechanisms and devices are conceived by procrastination, fabricated from procrastination, and fired with procrastination. Just think, I, for one, have not had the decency to drop a line to Joe Cohen and thank him for his grand hospitality at Kenwood a year ago. However, aside from procrastination, why is it that the average '13 man makes so little effort to write to you? Very briefly, but with utter frankness, I propose to answer this question.

"The origin of effort is interest. If someone else will make the effort to make the class notes interesting, we lazy rascals will let him do it. However, neither you nor any other class secretary can manufacture personal facts about us. Factual data must come from each of us. Once the data are supplied, there is no question but you, Fred, can edit the material with 'Arlobatic' perspicacity. It will then be interesting, and we will make more effort.

"Now let's go one step further. Suppose '13 class notes were made valuable. What do I mean? Well, suppose a chap could increase his earning power or his income in money, pleasure, friendship, or professional contacts by reading and contributing to '13 class notes. Is this a foolish, sentimental supposition? I say no. I will guarantee I am correct. To be specific, does Bill Brewster know the names of his classmates who would buy his rope if they knew that he made rope and darned good rope? Does Jo Strachan realize that not 20 per cent of his classmates know he will eventually be linoleum king? Does L. Luzern Custer — 'skin-friction Custer' to Ken Hamilton, Atwater, and other Course II men — realize that hiding his light behind a haystack has hurt his business and my pocketbook? Does George Richter know that I am a keen competitor? And that thesis burglar — Eddie Germain — why should we ride on his tires if he won't drop us a line once in 25 years? (Ed and I did our thesis together — I did 95 per cent of the work — Ed got 95 per cent credit; he was the better salesman — yes, sir!)

"Fred, it is my opinion we would be money ahead if we all knew what our classmates were doing. Why not get such data? Suppose you filled up one issue of class notes just with our names and business connections. Such a listing would be mighty interesting. For my

part I would cut it out, file it, refer to it, use it to make money or to look up a classmate for a friendly chat when traveling. Maybe there is someone I could help; and you cannot help anyone without helping yourself — in the long run. Interlocking relationships, in tune with sound business ethics and cemented with that peculiar comradeship that makes all Tech men brothers under the skin, these things are assets if used — liabilities if neglected. How are you going to get the data? Send a questionnaire to all of us. Put teeth in it. Fine all who do not answer the first time 50 cents. Increase this fine to \$5.00 the second time. Then if they don't answer, wire collect. Get answers — or money.

"Now please don't think I am hard boiled, because you know otherwise. But man alive, our class notes are impotent, anemic, stagnant, decadent, and, by and large, a disgrace to our Class and a mockery of Tech spirit. In spite of all of this, I believe, at heart, we are the finest bunch of fellows who ever said Tech is hell — and *lied*. Finally, Fred, don't you take any of this to heart. You, and other members of an all too small loyal coterie, deserve the praise of all of us delinquents." — Ed's suggestion for a directory is good and others have asked for it. The questionnaire will be forthcoming. With Phil Terry's help we should do the job right.

Good old Max Waterman, II, is the kind of person who would wish to "blush unseen," but good will out. This clipping is from a Bridgeport, Conn., newspaper of April 9: "Max L. Waterman, Fairfield, former assistant works superintendent of the Bridgeport plant of the Singer Manufacturing Company, has been promoted to the position of assistant Vice President of the company. . . . Mr. Waterman became connected with the Bridgeport plant of the Singer company immediately after his graduation in 1913 and remained in the local plant until January, 1936, when he was transferred to the company's executive offices in New York city. . . . Mr. and Mrs. Waterman live on Inwood Road, Fairfield, and have one son, Donald, who is a member of the senior class at Massachusetts Institute of Technology. Mr. Waterman is a member of the Brooklawn Country club." — Thank you, kind reader, for this clipping, which would embarrass Max but pleases all of us.

The foregoing was written when I had practically given up hope of hearing from Gene Macdonald. Gene always had the knack of pulling rabbits out of a hat. Read now for yourself. Fred Murdock wrote Gene Macdonald as follows: "Three weeks ago the doctor took out my offensive gall bladder to end all bellyaches. I'm doing fine but I need your help: Class notes are due in Cambridge on the 24th. Will you please invoke your Muse to bestir itself in the course of the next week?" Murdock dated his letter May 12, but Macdonald, because he had become involved in his spare time with an 86-acre farm on which his brother is spending full time, received the letter on



1913 Continued

May 22 and wrote Murdock as follows: "I was alarmed to hear about your operation. The removal of a gall bladder must be very serious to anyone but, for a fellow like you, I don't see how you will ever get along without it.

"On your behalf I have spoken to my Muse, but she won't 'bestir,' she just grunts and rolls over. By telephone I tried Larry Hart's Muse, but he was on the point of taking her out of town with him on Johns-Manville's business. The trouble is, Fred, that I come in contact with very few of our honored classmates and those I do see have all become resigned to the rather comfortable rut appropriate to our age. Nothing startling happens to us. I had lunch with Ralph Rankin recently. He told of a trip in a small sailboat from Delaware to New York Harbor. It seems that by circumnavigating New Jersey he rediscovered Port Washington, where the Rankin family lives, and was well pleased with the trip. On the way the sea was rough enough to toss him from a berth on the port side to a berth on the starboard side, and vice versa, without waking him up.

"At a dinner of the M.I.T. Club of Northern New Jersey a few days ago I saw Gilbert Pardey and Allen Brewer and Bob Bonney. Allen continues with the Texas Company, and Bob continues to help Joe Strachan run Congoleum-Nairn, Inc. Seeing Bob these days always recalls that great cross-country race between the Classes of '13 and '14 when, as Bob and I labored over the Larz Anderson course and were not more than a mile from Tech field, we were met by Larry Hart running in the opposite direction. He gasped: 'Where have you been, fellows? The 1914 team have all finished.' Bob and I refused to waste the breath we didn't have by replying but just kept plugging along and, so far as I know, we're still doing it. — I occasionally see Horace Lawrence in connection with the American Standards Association, where he is on the staff. This association is doing remarkable work in simplifying and standardizing manufactures and habits throughout the country, covering everything from mattresses on hospital beds to the color of traffic lights.

"Pete Haynes, whom I see occasionally, continues to have a pleasant outlook on life in spite of the much discussed attitude of Washington toward Wall Street. — Henry Thierfelder I see when I visit the Rhode Island State Highway Department. You and Henry, you remember, used to stage football practice in the applied mechanics recitation room and similar places; a couple of wild bulls in a shop that, thank goodness, wasn't china. Henry now is amiable and very pleasant and helpful if you need information or influence in his little state. — John Hession continues to put 'Gunite' or 'Guntex' on steel structures to make them last forever, which I object to because the shorter they last the oftener they have to be designed by structural engineers like me. — That's all I can think of now, Fred, so you jolly well better get on your feet before the next

notes are due and not leave them to any amateurs." — **FREDERICK D. MURDOCK, Secretary, Murdock Webbing Company, Box 784, Pawtucket, R.I.**

## 1914

All the news centers around our 25th reunion, and regretfully these notes must be written ten days before the reunion. The prospects, however, are for a record attendance and a lot of real enthusiasm. Ross Dickson and his committee have done a noble job in working up a program and building up the largest number of advance payments of any reunion we have ever had. It is now planned to publish a postreunion issue of the *Fourteen Pointer*, and you will, accordingly, get early details from it. You will have learned that, as the 25-year Class, we shared with the 50-year Class the place of honor at Alumni Day. Charlie Fiske, representing 1914, addressed the senior class. Your Secretary was privileged to read Charlie's speech in advance of delivery, and he can assure you that it was top notch.

Louis Wilson is entitled to quite a place of honor in the Class because of the splendid record his two sons have established at Technology. Louis is the first '14 man to have two sons at Tech, and it must be particularly gratifying to him to have them both make such fine records. The older son, Richmond, will be a senior next year and is taking the Applied Physics Course. In all three years he has played basketball and has been awarded his "T." The younger son, Duncan, is a freshman this year and is going to take chemical engineering. He likewise has played basketball and won his numerals.

Your Secretary was in Philadelphia on May 17 and spoke before the Technology Club of that city. Buck Dorrance, George Whitwell, MacCart, Gould, and Kitchen attended the dinner, and all except Kitchen had signed up to come to the reunion. Buck has been wearing a groove between Philadelphia and Boston due to a serious illness of his eldest son, who has been confined at a Boston hospital for several weeks. Buck's son now seems well on the road to recovery, and it goes without saying that every classmate expresses his sympathy to Buck and wishes the boy a speedy return to health.

One classmate missed at this reunion was Hank Merrill, who felt that it was just a bit too far to get to from his present station at Shanghai. Hank was able to schedule his return last time to coincide with the 20th, but because of conditions in China it was not quite so easy to make such arrangements this time. Hank has been with the Standard Oil Company since 1920. — Bill Price has resigned as vice-president of the Carrier Engineering Corporation and has established, in the Field Building, Chicago, a consulting engineering practice in air conditioning. Because of this recent change and the detailed work involved, Bill was a little fearful at this writing as to whether or not he was going to be able to get to the reunion, but he promised to come — flying if necessary — if it could be at all arranged for him to get away.

Chet Gardner, who is in the Naval Engineering office at New York, reports that he was married last January to Miss Margaret MacAdam. Events of this sort are not frequent in our class notes now, but our congratulations are nonetheless sincere. — E. L. Osborne, who still continues his military activities as a reserve major in the Field Artillery, received on last Armistice Day the decoration of the Cross of the Imperial Order of St. Nicholas for services rendered during the World War. Freddie Karns, another of our military men, is likewise a reserve major. — It is with great regret that the death of Richard H. Wheeler at Andover, Mass., on April 1 is announced. Although Wheeler was affiliated with both '14 and '16, he always remained loyal to '14 and could be counted on when requests were made. He will be greatly missed by his many friends in the Class.

As all of the Class were not able to attend the Swampscott reunion, this occasion is being taken to confirm a decision which was announced then and which has been arrived at only after careful thought. At the last two five-year reunions, after 10 and 15 years of service respectively, your Secretary has endeavored to resign, but because of the usual enthusiasm present at such gatherings was unable to make the resolution stick. As the Class desired having the secretaryship remain unchanged, there was no insistence on resignation on the part of the Secretary. However, now that 20 years have passed and, solely for the good of the cause, acting on the theory of desirability of rotation in office, your Secretary is convinced of the wisdom of such action, and took such a stand at the reunion. The work has been very pleasant, and the absence of the close personal contacts brought about by the office will be greatly missed. Because, however, of propinquity of my business office to the Institute, I can unquestionably be of help in many matters and will always be eager to do so. This may work out especially in the event that an annual alumni fund takes the place of the present dues system, when someone from each Class will be required to work with alumni headquarters. — **H. B. RICHMOND, Secretary, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, Assistant Secretary, 1775 Broadway, New York, N.Y.**

## 1915

By the time you read these notes I hope many of you will have enjoyed a visit to the Institute on Alumni Day and a renewal of old friendships at the Class Cocktail Party. The details will be reported in the first Review next fall. — "Help Azel" has produced results: Behold and read from some of our fine old friends who have not been in this column for years but have written with their class dues. — Here's a dandy letter from Guernsey A. Palmer, typical of his good-natured humor. Seriously, however, I know we all join in sympathizing with him in his illness and wishing him a speedy and complete recovery: "I'll bet 1915 has at least the most efficient, if not

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the best-looking, Class Secretary. When it gets to the point a postage-paid envelope is inclosed with an appeal for class dues, certainly it should produce results, and you are to be complimented. We not only have free postage in this brotherhood of ours, but if my memory is correct I read something in *The Review* about a free cocktail party to be held on June 5 at the Statler. . . . There must be a Santa Claus somewhere in the Class itself, and I am 100 per cent for that guy, whoever he is.

"Six months ago I was suddenly stricken with a heart attack, spent a couple of months in the hospital and the ensuing four months in bed at home. I am now just getting to a point where I shuffle around a little bit on my legs, sort of Charlie Chaplin style, and out in the sun in a wheel chair for an hour or two a day. The doctors tell me that in another three or four months I will be pretty much my old self, better in some respects, but will have to be somewhat careful as to severe physical exertion. For the immediate moment this means I certainly don't attend your cocktail party in person, even with the inducement of peanuts, popcorn, and potato chips, but I am hoping to get over to my company (De La Vergne Engine Company) headquarters in Philadelphia in the fall and may be able to include Boston in that itinerary. . . . When any of you fellows get down this way (Houston, Texas), look me up, and in the meantime please remember me to the gang at your party."

Jerry Coldwell remarks about my class-dues letter: "Would this be what is known in the vernacular as a 'sucker list'?" Wise guy, eh! Still, he sent his check — one every minute! — Have a laugh with Jim Tobey's modest reference to the much publicized New York World's Fair: ". . . Since I have an engagement of long standing at Moosehead Lake at the time of the cocktail party on June 5 and so cannot attend, you might devote this check to giving my plethora of cocktails to some or several of our classmates. Recently I was in Jacksonville, Fla., en route back from a little jaunt to Havana, and while there phoned to George Simons. His office and a softly southern voiced secretary were there, but George was out somewhere. Since my plane wouldn't wait, I regret that I could not get in touch with him. It is rumored that we have a World's Fair here this year, and I trust that some of the peregrinating '15 men will wander this way. If so, I should be overjoyed to see any of them."

Gene Place, though transferred from Boston to Philadelphia, does not forget us: ". . . I do miss the opportunity of getting together with the boys in the Class, and realize that I might have given them more time when I was located in Boston. . . ." — Easty Weaver touches a sensitive spot for many of us: ". . . Hope you find plenty of the gang that are making both ends meet, so you can put things over with that bang!" — Bill Brackett's last line sounds like a radio jester: "Have just been selling, for the

past 15 years, with more or less luck, electric motors of all sizes and types. Am supposed to be a motor-application expert by now. You know where the office is, drop in and see me sometime. Suppose I should have signed it 'Classically yours.'"

Remember Harry Murphy and his favorite aunt at last year's party? He says (May 18): "Inclosed is a check. I was not going to send any but will try to stall off my creditors a while longer. I am looking forward to seeing the gang at the cocktail party." — Carl Dunn in Chicago is planning to be with us in 1940 for the big 25th reunion. — Incidentally, on the letter that follows, Charlie Williams is listed as the assistant commissioner of the borough of Manhattan Department of Borough Works. Nice going, Charlie! ". . . I am sorry that I cannot be in Boston this June, but I have been looking forward for the last four years to our 25th. With only a year to go now, I think I can hold out, and I promise to be on hand provided you'll make George Rooney lay off me." Poor old Pirate Rooney! Everyone seems to pick on him; no one will let him alone. Still, everyone likes the old redhead. Charlie Williams should be afraid of George.

One of my funniest answers comes from Burr Swain, who apparently still retains his delightfully gay manners. We'll all be glad to see him again. He simply inclosed a bill in his letter: "Free! Free! for the asking. Inclosed is no check, but Roosevelt calls it good, and I hope it is good until you are rid of it. Gee, I would like to be with the gang, June 5, but I am saving up for next year. I salute the party and will take one to you all at six at some country bar. If the health holds as it has in the past, I'll be on deck for the 25th with the not too thin hair on top of the block. Best wishes to yourself and George T. and success in your arrangements for 1940." Thanks, Burr. — Bill McEwen's going to be with us again: "Roosevelt's prosperity hasn't reached here yet, so don't believe I'll be able to come up this June but am planning for next year, which I believe is our 25th." How'd you like to be Class Secretary — and put a lot of time and effort into a mailing for class dues — and have lots of hope and enthusiasm for a generous and big response — and then wait and watch the replies trickle in until you'd received the *huge* total of five per cent returns! You'd feel rather discouraged, wouldn't you — maybe even disgusted — well, then, you know how I feel after the meager support you've given me. I'm not crying on your shoulders, but this is once when you can really 'Help Azel.' — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline, Mass.

## 1916

Paul Austin sends us the sad news that Charles F. Gross, XIII, died in Oakland, Calif., late in March this year. Gross was formerly associate professor of marine engineering at the University of California, in Berkeley, and in recent years was supervising marine engineer for the United States Army Transport Service. Besides his wife, Helen, he leaves a

daughter, Helen Jean Gross. Before coming to California he was director of marine engineering at the United States Naval Academy.

Jack Heller is president of a new organization known as the Gasair Corporation. Paul Austin is associated with him. They manufacture butane-carbureting equipment, on which Jack Heller holds a patent. The business has gone through seven years of the development stage and has now arrived at the point where the future looks quite bright. They are receiving inquiries from all over the United States, as well as Europe, and are constantly finding new uses for their equipment. They recently supplied the town of Ukiah, Calif., with three carbureting units for butane gas, replacing manufactured oil gas which was formerly used. Their machines are fully automatic and are the only ones on the market which vaporize the liquid butane and mix it with air without the use of electrical power. Paul Austin indicates that they are looking for a few sales representatives to handle their product in the South and Middle West. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

## 1917

Frank Maguire was good enough to make a special trip — probably from Boston — to tell us that the annual banquet of the M.I.T. Club of Northern New Jersey was held on April 20, with its usual success. In part, at least, this note was due to the presence of several representatives of a well-known Class, including Alden Nute, X, now with Calco Chemical Company, in the textile division, located at Bound Brook; Roger Brown, also X, of the research department of the Barrett Company at Edgewater, N.J.; William Neuberg, also a chemical engineer, general manager of the William Neuberg, Inc., manufacturers of industrial chemicals. Ray Brooks, who needs no further description, was on hand, and of course, McNeill and Maguire had much to do with the festivities.

From various sources we have heard praise of the guest-secretary plan initiated with Ted Bernard — praise that has been almost embarrassingly strenuous. Most enthusiastic about it are the two Secretaries, and Ted has agreed to try it again, at least once, next year. Possibly others will be willing to assist and thus draw from sections that our present practice misses.

Irving B. Crosby has spent most of the last several months commuting between (and among) Haiti and the Far West, Canada, and Boston. These notes are being prepared before Alumni Day, when more information about his travels undoubtedly will be obtained. — It is with intense regret that we must note the passing of Francis P. O'Hara on April 21. He died in Pittsburgh, Pa.,

A newspaper account that attracted attention over the country concerned one Penn Brooks: "Probably none of Sears's



1917 Continued

top-bracket executives has had a more picturesque tour across the organization chart than a young Massachusetts Institute of Technology graduate who came to the firm when its retail stores were more a hope than an actuality. The man is E. P. Brooks. . . . Although still a young man as modern business careers go, Mr. Brooks is an authentic veteran of the Sears retail organization. He came to the company about two years after the first retail store was opened, and became the first merchandise manager the retail organization ever had. Later he was appointed manager of one of the company's largest groups or districts of retail stores.

"The neophyte engineer-merchandiser was graduated from M.I.T. in 1917 and promptly joined the Army. He was shipped very quickly overseas to the battle front, saw plenty of active service, and when the War ended was in the possession of five service bars, which happens to be maximum. He was a lieutenant in the First United States Engineers, first division, and although no interviewer was ever able to wrest the fact from him, the records show that he was awarded the Distinguished Service Cross. For a time he served also on the staff of the division assistant to the chief of operations. After the Armistice he moved into German territory with the Army of Occupation and remained there until July, 1919. Returning to Paris, he spent six months at the Sorbonne.

"His first job when he returned to America was with the American Cotton Oil Company, where he was assistant to the manufacturing vice-president. He went from there to the Barrett Company, spending a year on research problems in management with this firm. During this period he became intensely interested in the promotion of an idea . . . that banks should employ engineers to analyze management policies and to develop new standards of credit measurement based on an engineering appraisal of an industry. He was also engaged in comprehensive studies which aimed at setting up better criteria for the synchronization of manufacturing and marketing throughout the country.

"In the early 20's he was visiting in Chicago and met — through a common friend — General R. E. Wood, who was at that time a vice-president of Montgomery Ward and Company. . . . The younger man was fascinated by General Wood's vision of an economy in which a streamline technique of big-scale merchandising would gear the nation's marketing to its machinery of production. Adequately accomplished, such a technique would inevitably create widespread improvement in the standard of living and would effect a more stable market and more stable employment. . . . The contact some time later led to a job at Montgomery Ward and Company. In 1927, after having become a department manager, he retired for a short time and then went to see General Wood, who in the meantime had become a Sears vice-president.

"When Mr. Brooks had accepted the general's offer of a job at Sears, the firm was just getting organized for its retail expansion. There were only eight stores, all but three of which were in mail-order plants. Mr. Brooks was appointed merchandise manager for a group of departments in these stores but within a year had been promoted to the job of general merchandise manager for the retail organization; this job he held during a period of what was probably the most intensive campaign of store openings the country has ever known. He had the responsibility of developing merchandise selections for the stores; he created the 'service of supply' — taking both the term and much of its technique out of his army experience; and he did much toward establishing the merchandising *modus operandi* which has become one of the firm's basic policies.

"His next assignment was in the field, where he was placed in charge of one of the largest retail districts in the country. . . . In 1933 he went to the United States Steel Corporation but after 18 months, at General Wood's behest, he returned to Sears as supervisor of the radio department, which controls all merchandising in this classification for both the mail-order and retail organizations. When General W. I. Westervelt, celebrated technologist of the United States Army and later both technical director and general factory manager for Sears, reached the retirement age, Mr. Brooks was appointed to succeed him as the head of the Sears-owned factories.

"The Sears executive was born and grew up in Westbrook, Maine. . . . As a boy Mr. Brooks had his fling at merchandising and learned, he says, much doctrine that was useful to him later at Sears. He was chief of staff — as well as the staff — at old Judge Newcomb's general store at Prouts Neck. He says: 'Early in the morning I cleaned and hitched our old white horse, called Chub. After breakfast I made my rounds, calling at every house to get the daily order of everything from shoes to ships and sealing wax. You see, Judge Newcomb proceeded on the theory that "we had it, we'd get it, or 't wa'n't made." This was a lesson of considerable value when I was merchandising for Sears. After I'd made the rounds, the next job was to put up the orders. In this connection I developed an extraordinary proficiency in cutting cheese, and could hit the pound right on the dot. This troubled the old Judge, who called me aside one day and said: "See here, boy, when they order a pound, they'll take a pound and one-third up to a pound and one-half without kicking." Thus I was introduced to the art of trade-up.'

" . . . Mr. Brooks is an engineer by training. . . . He believes that his present post brings him closer to the goal of his early training than any job he has had since he left college. He is married and has three children — two girls and a boy. He is an accomplished horseman and hasn't, he says, 'been pitched off since December of 1938. That was the last of

many such experiences covering a lot of years.' He fishes and hunts whenever he gets the opportunity, but his friends refuse to concede that he plays golf."

The worthy Dean wafted his way through Cleveland, Detroit, and Chicago recently, but adequate official records of his actions there must wait full reports from our correspondents. He had advised us to write Dusty Cronin, Al Litchfield, and Chey Quilhot in Detroit; Sherry O'Brien, Cliff Carlton, Paul Flagg, Fat Whitney, and N. C. Works in Chicago; and also the ex-watchmaker of Elgin, Rad Stevens.

John H. Holton has returned to his old love, the field of air conditioning: "About the first of the year Carrier had another change in their operating management, and Carl A. Ostling was brought into the picture in charge of production and development. He has been connected with Du Pont, General Motors, and United States Rubber for the past 22 years and came to Carrier from Pontiac. I am going in as his assistant, with the large and meaningless title of 'assistant to the production vice-president.' As a matter of fact my first job will be that of chief inspector, responsible for quality, but that will lead me into working with the development department to the end that we get designs that are easy to manufacture in volume. I am eagerly looking forward to the work and to the association with this man. It will be pleasant to return to Carrier, where I have many old friends. Incidentally I have no regrets at leaving this soft-coal region, for to move a little farther toward the East is all to the good so far as our family is concerned. I think we shall enjoy living in Syracuse. . . ." — RAYMOND STEVENS, Secretary, 30 Charles River Road, Cambridge, Mass. PHILIP E. HULBURD, Assistant Secretary, Phillips Exeter Academy, Exeter, N.H.

## 1918

One year ago this time we had just finished enjoying our 20th reunion at Weekapaug, and here we are one year on that stretch toward our 25th. Many of us are beginning to think about that occasion, just a quarter of a century since we left the Institute. If you have any ideas for this celebration, your Secretary would be glad to receive them. Thanks to our President I have a few items of interest for the Class. Recently the following announcement was received by Maggie: "Mr. and Mrs. Ray L. Meader announce the marriage of their daughter, Ruth Grace, to Mr. Donald Godfrey Merrill on Saturday, April the 29th, in West Hartford, Conn." Congratulations to the newlyweds.

In the notes written after the Christmas holidays I told you that I had heard that Maggie was to speak in Swampscott at the Parent Teachers Association of which our old friend Don Goss is president. At that time I could not give date or topic, but now that it has taken place I can give you both: date, April 3; topic, "The Random Reflections of a Dissatisfied Parent." Dinner was served before the

1918 Continued

meeting at the Goss mansion, and our old friends Charlie and Dorothy Dow were among those present. On April 19 Maggie lectured in Providence to the Rhode Island Congress of Parents and Teachers. Either before or after the talk — but I think it was before — a nice-looking young lady approached Maggie and handed him a note which read: "Dear Maggie: My wife is attending your lecture this afternoon. Hope you don't give her any bad ideas. (Signed) Stan Franklin '18." I wonder what Stan thinks Maggie is doing — going around the countryside giving his lectures on marriage, such as he gives at Simmons and at the Institute, to the parent and teacher groups? I really doubt if that is the case, Stan. I think your wife was probably safe listening to him that afternoon.

May 1 saw the New York contingent meeting at the Tech-Williams Club. I give the report of the meeting just as it came to me: "On May 1 at the Tech-Williams Club in New York, 14 '18 men in New York gathered around the festive noonday board to swap stories about golf and gardening, and to growl about business conditions. The following were present: Art Smith, Bill Laskey, Jack Kennard, Pete Harrall, Bert Lerner, Ken Reid, Ev Rowe, Grannie Smith, Shorty Carr, Russ Mumford, Bill Foster, Sax Fletcher, Sid Marine, and Pete Sanger. Pete Harrall was voted the most efficient gardener (because he talked most about it). Ev Rowe was the worst because he hired a bunch of W.P.A.'s to clean up his place. He should have done it himself. Laskey, who hadn't shown up for years, put in an appearance. He was doubly welcome because his presence bolsters the courage of the indomitable few who never fail. 'The Old Guard and so on' — you know. After lunch we voted *not* to join the May Day parade. More later." This profusion of words was written by Pete Sanger and signed by him. Pete tries his best to keep the New York group together, and I, for one, think he is doing a great job.

Sam Chamberlain is back from Paris and is at his home in Marblehead again. Welcome home, Sam; hope you stay a while with us this time. Your old friend George Gibbs '00 was asking for you when I saw him in Milton the first part of April. — Our old friend Jack Hanley has forsaken Massachusetts and is now located at 78 Waterman Street, Providence, R.I. Hope this means that he has succeeded in selling his Milton house which he has been trying to get rid of for some time. Congratulations, Jack, if that is what you wanted to do. — Boston crowd take notice! Hamazasb D. Manuelian has moved from the New York district into your territory and is now located at 9 Rider Street, Quincy.

I am sorry to have to tell you of another death in our ranks. I acknowledge that it is rather late to do so but the news has just recently come through the Alumni office. Charles E. Poirier died April 21, 1938. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilton Road, Rowayton, Conn.

## 1920

Since 1920 last appeared in these columns I came across a copy of the proceedings of the inauguration of Ed Burdell as director of the Cooper Union last November. I wish each member of the Class could read this booklet because he could not fail to be impressed as I was with the quality and eminence of one member of our Class. Among others, Nicholas Murray Butler and President Compton had a lot of nice things to say about Ed. Ed tells me that he has had a mighty interesting year as chief executive of the Cooper Union and that his opportunities there, he feels, are not equaled by any other college executive. One of his right-hand men is Arthur Radasch, who is head of the department of chemical engineering. — Another member of the Class who will have attained some eminence by the time these notes come to light is Perk Bugbee who has just been made managing director of the National Fire Protection Association, the country's leading fire-prevention organization.

All of us who live hereabouts and who read the newspapers were greatly shocked at the sudden and untimely death of Waldo Brown, lieutenant commander, in the airplane collision during the launching of the aircraft carrier *Wasp* early in April. Waldo had been prominent in New England aviation since the World War, when he was one of the first 500 navy pilots to be commissioned. After the War he served as assistant to Senator Bingham when the latter was president of the National Aeronautical Association, and later he became traffic manager of Colonial Air Transport. To his wife and five children go the deepest sympathy of every member of the Class.

Stan Bragdon has been located at South Milwaukee, Wis., address 618 Hawthorne Avenue. — Phil Haebler's new address is 6 Belleclair Place, Montclair, N.J. — Austin Higgins, XV, is now in Buffalo, address 120 West Eagle Street. — Henry Erickson is with the Allis-Chalmers Manufacturing Company at El Paso, Texas. — Twenty's Twentieth should be an occasion to shake the world, or at least a part of it, so it isn't too soon for everyone to be thinking about it and planning for it. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## 1921

It is with somewhat mixed feelings that we wind up another series of notes in this last issue of the current volume of *The Review*. Thankfulness at not being forced to prod and plead for the next three months in order to wangle meager scraps of news out of an infinitesimal portion of the Class is coupled with a certain amount of apprehension that maybe the persistent nagging of the last nine months will boomerang and we won't get anything at all. Verbal brickbats will be just as acceptable as literary bouquets, whichever represent your individual reaction. Well?

Dug Jackson, VI-A, "postcards" mild reproof to both Saint and your scribe for taking liberties with his nickname. Alas, the passing years have dimmed the newsman's utter disdain for arty yearbooks, and it was sheer naiveté, to use "Technique 1922" as a reference work to check our failing memory. Dug has ample cause for action against the 'Snique of that vintage for two erroneous cognomens which it flaunts for the public gaze. Dug also reports that Rufe Shaw, VI-A, has acquired ownership of the Pedrick Tool and Machine Company of Philadelphia as noted last month. — From the Boston *Herald* for April 16: "Mrs. W. Irving Middleton of Watertown announces the engagement of her daughter, Miss Pearl Newton Middleton, to Mr. John Spearman Cummings, also of Watertown. Mr. Cummings is a graduate of M.I.T. in electrical engineering." When do we toss the rice, Jack?

We have had several very enjoyable meetings with J. Van H. Whipple, II, engineering and management consultant with offices and laboratories at 79 Jane Street, New York City. Jack heads a group of very active design, development, production, and administrative engineers who are associated in handling a wide variety of technical and economic problems for clients in many industrial fields.

Saint sent us the following very welcome batch of news items: "A few months ago, Roderick K. Eskew, X, stopped in, and recently I had a letter from him. He is with the Brown Company in their new products division in New York City and he lives in Ramsey, N.J. Rod is married and has one youngster. A. D. Harvey, III, wrote that he had accepted a position with Kimberly-Clark to direct the sales of their newly developed insulation, starting last May. Dan has been with Nash Engineering Company of South Norwalk, Conn., for 15 years, lately as their sales manager. He writes: 'Jumping from pumps to insulating houses and refrigerators, and at the same time breaking an association of some 15 years, has been, and still is, a major operation. I am not sure how a salt-water man is going to operate in fresh water, but it may be possible and the change will be stimulating, interesting, and perhaps even profitable.'

"Earlier this year I had a letter from Irv Jakobson, XIII. Jake is president of Jakobson and Peterson, Inc., Foot of 16th Avenue, Brooklyn, N.Y., engaged in shipbuilding, repairing, and dry docking. At the paper industry meetings in New York in February, I saw quite a number of the gang, including Albert E. Bachmann, X, who is now with the Missisquoi Corporation, Sheldon Springs, Vt., where he has been located for about three years. Red is married and has a boy five years old. He was formerly with Kimberly-Clark in Neenah, Wis. John J. Healy, Jr., X, was also at the meetings, both giving and absorbing technical information. John is engaged in technical sales work with the Merrimac Chemical division of Monsanto Chemical Company, with headquarters in Boston. Recently Paul



1921 *Continued*

Rutherford, VI-A, chief engineer of Delco Products, Dayton, Ohio, spent a night with us in Manchester in the course of one of his business trips."

The Register of Former Students of the Institute broadcasts another appeal for someone to supply the present address of Samuel Sharlach, X, formerly of 34 Franklin Street, White Plains, N.Y. The Institute is holding mail which has been returned for lack of a forwarding address. While we are on the subject of addresses, the following new ones have just been added to the records: Dr. Frederick W. Adams, X, 401 Morewood Avenue, Pittsburgh, Pa.; Robert E. Beard, X, 9912 Winner Road, Independence, Mo.; Carole A. Clarke, VI, 245 Kent Place Boulevard, Summit, N.J.; Asher Z. Cohen, X, Olson Preservative and Paint Corporation, 9 Delancy Street, Newark, N.J.; Robert S. Cook, I, 101 Hubbell Street, Canandaigua, N.Y.; Major Albert L. Edson, XV, 102 Bellevue Street, West Roxbury, Mass. "Maj" is the new title of our well-known head of the Boston Airport.

The new locale of other wanderers follows: C. Doane Greene, X, 59 Calton Road, New Rochelle, N.Y.; Weston Hadden, VI, 552 East 17th Street, Brooklyn, N.Y.; Captain John R. Hardin, I, Command and General Staff School, Fort Leavenworth, Kansas; Philip H. Hatch, VI, 620 Pelhamdale Avenue, Pelham Manor, N.Y.; Sherman E. Nichols, XV, 139 Clifton Street, Malden, Mass.; Herbert W. Reinhard, XV, 7330 Lindell Boulevard, St. Louis, Mo.

Alumni Day of 1939 was a high spot in M.I.T. history and a very considerable feather in Warrie Norton's cap. Join us here in the first fall issue, November, for a detailed account of 1921's share in the festivities. Meanwhile, a very pleasant summer to you all! — **RAYMOND A. ST. LAURENT**, *Secretary*, Rogers Paper Manufacturing Company, Manchester, Conn. **CAROLE A. CLARKE**, *Assistant Secretary*, 245 Kent Place Boulevard, Summit, N.J.

## 1922

Does anyone who reads this column know where copies of "Technique" for 1921 and 1922 can be bought or stolen? Lee Carroll is looking for copies of both 1921 and 1922, and your Secretary is looking for a copy of 1922. This advertisement is Lee's idea, but your Secretary maintains that a class secretary must have a copy of the class yearbook; so, if only one copy of the 1922 book results from this plea, we have agreed to draw lots.

Another answer to Ed Ash's recent questionnaire has been received from George W. King, VI, who lives at 752 West Morrell Street, Jackson, Mich. George has been with the Consumers Power Company since 1926. He is married and has two daughters. — An informal class luncheon was held on April 26 at the new quarters of the Technology Club in New York City. Everyone agreed that occasional class get-togethers were enjoyable and desirable. Vice-President Kurtz is going to carry out this idea for

the classmates who live in and around New York. Present at the luncheon were the following: Francis M. Kurtz, XV, Cadwallader F. Blanchard, XIII, E. Allan Reinhardt, XV, Edwin J. Allen, X, H. Morton Cronk, Aeronautical Engineering, Irving Ball, X, Raymond C. Rundlett, XV, Vernon E. Whitman, XIV, William C. Gilman, VI, Laurence W. Coddling, VI, John F. Halpin, I, Leland M. Rice, V, and Clayton D. Grover, V. — **CLAYTON D. GROVER**, *Secretary*, Whitehead Metal Products Company, Inc., 303 West 10th Street, New York, N.Y. **C. YARDLEY CHITTICK**, *Assistant Secretary*, 77 Franklin Street, Boston, Mass.

## 1923

It looks as though here is the long-distance record for any of our Class who attended Alumni Day this year. As this was being written (about May 23) E. B. Ledesma from Manila reported that he had reached New York City on his way to Cambridge and would be in Boston before Alumni Day, with time to spare. — I am a little late in recording events of great importance in the respective households of Pete Pennypacker and Lem Tremaine. The first is the arrival of James Coolidge Pennypacker on March 27, and the second is the arrival of Russell Ford Tremaine on April 22. Congratulations, both. — A news release from the International Nickel Company, Inc., announced the opening, on May 1, of a new field office for its development and research division. This office, at 67 Wall Street, New York City, is the sixth established to serve the needs of manufacturers in metallurgical problems. John W. Sands is announced as director of this office. Its job will be to promote the use of nickel-alloy steels, nickel cast irons, and the use of nickel in nonferrous alloys.

Paul B. Brown has been with the Norton Company of Worcester since 1925, during most of which period he has been sales representative in Detroit. I have the following information in a recent letter: "Beginning June 1 I am severing connections with Norton Company of Detroit to assume the duties of managing director of Australian Abrasives, Ltd., of Sydney, Australia, a subsidiary of Norton Company, and expect to be there two or three years at least. My present plans call for my spending approximately two months in England this summer, following which I shall sail for Australia, arriving there about October 1. For your records, you may address me at Norton Company, 5805 Lincoln Avenue, Detroit, or Norton Company, Worcester, and mail will be properly forwarded to me. — **HORATIO L. BOND**, *Secretary*, 457 Washington Street, Braintree, Mass. **JAMES A. PENNYPACKER**, *Assistant Secretary*, 96 Monroe Road, Quincy, Mass.

## 1924

Closing dates of The Review do not allow a story of the big reunion to be told at this writing, but late May reservations indicated that a most successful party was in store. Other news is plentiful, however,

and must be condensed. Ed Hanley, described by the Middletown, Ohio, *Journal* as "an outstanding authority on the control of overhead," was the speaker before the March dinner of the National Association of Cost Accountants at Dayton. Ed is secretary of the Allegheny Steel Company, Pittsburgh, Pa.

Basil B. Zavoico is credited with part of the preparation of a brochure, "Economics of the Petroleum Industry," published by the Chase National Bank, where he is a member of the staff of the department of petroleum economics. — Paul Cardinal is being hailed by his friends in the pharmaceutical industry as the "vitamin king." Paul has been given complete responsibility for developing bulk sales to manufacturers, and his company, Hoffmann-LaRoche, is putting up four new buildings to turn out vitamins B<sub>1</sub> and C by the ton. On June 26, Paul and Lorene celebrated their 10th wedding anniversary, surrounded (and that is the term) by their three daughters and three sons.

Late in being recorded, but still newsworthy, is the fact that Hal Donovan has been married for four years, and has a year-and-a-half-old daughter. — **FRANCIS A. BARRETT**, *General Secretary*, 50 Oliver Street, Boston, Mass.

## 1926

A miniature 1926 reunion was recently held, purely by chance, in Thompson's Spa, Boston. George Smith happened to be there on May 4, and here is his report: "First, who should come walking in but Chenery Salmon, better known as Pink. Pink is statistician for the Merchants National Bank in Boston and is living in Needham. He has remained in the Coast Artillery Reserves and now boasts a captaincy. Pink had some information on a few of the other boys, too. He advises that he recently heard from Ken Lord who is still selling motors for Reliance Electric and Engineering Company in the Piedmont section. Ken in turn reports that Bernie Morgan is now chief engineer for the American Viscose Company.

"Pink also reports that Stanley Cheney is still with the Plymouth Cordage Company but has forsaken chemistry for plant efficiency work. He has not forsaken chemistry completely, however, because he is a major in the Chemical Warfare Reserves. — Johnny Searles is also at Plymouth Cordage in the laboratory and has developed into a real candid-camera fiend. About this time Mack Bush wandered in, and, shortly after, Johnny Spence came in, too. Mack and Johnny are both in the investment business in Boston. Mack is sales manager for Carver and Company, and Johnny is with Estabrook and Company.

"With all this crowd around me I cannot vouch for who was responsible for the different news items, but here they are: Ed Damon is with Godfrey Cabot Company at their carbon-black plant in Texas. — Carl Everett is with Standard Oil of New Jersey in their New York office as coordinator of lubricating oil production. — John Fletcher is still in Willimantic, Conn., where he teaches mathematics in

## 1926 Continued

the high school. — General Dawes is still in the elastic webbing business in Hudson, Mass. — Arthur Brockelman is handling the Lawrence division of the Brockelman Brothers market chain, and he shows plenty of evidence of being in the beef business. Also Arthur is boasting another son — that makes three. — Bruce Humphreville is still in the Midwest with Johns-Manville. — Lyman Billings is with Socony-Vacuum in the Boston area, selling textile oils. — Jack Larkin is with the Crucible Steel Company of America. He lives in Montclair, N.J., and does considerable traveling, getting to New England frequently. — Bill Forrester is with the National City Bank in New York City and lives at Huntington, Long Island. — George Leness is assistant vice-president of the First Boston Corporation in New York City. — The Secretary is grateful to George for the largest batch of notes, by volume, that has been received from any one person this year.

Red Elmendorf, who is with the General Electric Company at Nela Park, Cleveland, was at the Institute in May and reported the birth of a daughter, Margaret Field, on Easter day. — George Smith and Bill Lowell were present at a meeting of Course XV Alumni on May 9 in the Graduate House at the Institute. — April brought news of the engagement of Miss Mary Carnahan of New York to Edward Newton Roberts. Roberts is a mining engineer and has spent a number of years in South America. The wedding, scheduled for Panama, will probably have taken place by the time you have read these notes, and the couple will be on their way to Chile.

The New York Times recently carried a photograph and story about a handsome and detailed model of the S.S. *America*, which will be the largest merchant ship ever constructed in American yards. The model is 15 feet long and weighs 600 pounds and was executed in the model shop of the famous Mariner's Museum at Newport News under the direction of our own S. Besse, the museum's model engineer. Precision machine tools capable of fashioning every one of the hundreds of small parts necessary in a model are permanently installed in the museum, and five men — mechanics, machinists, and an expert cabinetmaker — worked on them for five months under Besse's direction. A total of 5,000 hours was required to complete the product. Besse was graduated from the Course in Naval Architecture and Marine Engineering and, until a few years ago, was a member of the staff of the Newport News Shipbuilding and Dry Dock Company.

The Secretary, in this last report before The Review's interregnum, wishes all of you a refreshing summer. He will be back again in the first fall issue. — J. RHYNE KILLIAN, JR., *General Secretary*, Room 3-208 M.I.T., Cambridge, Mass.

## 1928

First we have a belated congratulation to offer Mac McCarroll on his promotion to managership of the Los Angeles office

of Paramount News. Here is a copy of *Variety's* article on the subject: "Marshall McCarroll, since 1929 in charge of sound recording on the Pacific coast for Paramount News, has just been appointed manager of the Los Angeles office of the newsreel, succeeding Joseph R. Johnson, resigned to go into an independent motion picture enterprise. . . . McCarroll, a graduate of Massachusetts Institute of Technology in 1928, went with the research department of General Electric Co. at Schenectady, N.Y., immediately thereafter, and remained in that spot, developing picture sound recording on film, until going with Paramount News when sound came in." Our congratulations to Mac are late because it has taken the man almost a year to let us know about this fine promotion. Nevertheless, we are enthusiastic.

Bill Hurst wrote us an interesting letter about his views of the value of Technology to an individual Alumnus, and it was quite stimulating to get this comment. Lots of us feel that way, but in the main one never hears from the "satisfied customers" and it's good to know of their feelings too. Bill reports running into Bert Dayton; although the point was not mentioned, both are with Humble Oil and Refining Company — Bert at Baytown, Texas, and Bill in Houston. — We hear that Martin Van Brillhart is located at 29 South Duke Street, York, Pa. He farms 17 acres and runs a general insurance agency. — From Irl Sandidge, Jr.: "I am still in the oil and gas industry, roving as usual."

Yes, sir, I think I'll start a purposeful mistake in each issue of the class notes. Of course you can find many errors that aren't supposed to be there, but this idea would be designed to start fellows writing in about the notes. The idea sprang from a surprise letter from Jack Chamberlain challenging my definition of leukemia. That I believe is my first letter from Jack in 11 years, and if a mere mistake will do that, I'm for bigger and better mistakes. — Mark Kolligian is married and reported to be prosperous looking, according to my "society editor." Mark is now with the Union Motor Sales, Inc., of Somerville, Mass. — Mortimer C. Budlong, who is with the Western Clock Company at Peru, Ill., which is near LaSalle, has recently been promoted to the position of assistant comptroller of his company. — Gil Ackerman, XIII, is now located with the Weyerhaeuser Steamship Company, Tacoma Building, Tacoma, Wash. Gil is still connected with marine engineering, as the Weyerhaeuser Timber Company operates six of their vessels in the western intercoastal trade. — Thomas G. Harvey, who was badly cracked up in an automobile accident on Thanksgiving Day, 1937, is still on crutches and does not look forward to discarding them until along toward the end of 1939. He is taking advantage of his convalescence to follow a course in metallurgy at the University of Wisconsin to get an M.S. degree. He now has two children. — Chuck Sampson's new address is 130 Eastbourne Avenue, Toronto, Canada. This change was made a necessity through the fact

that the Sampsons have had the pleasure of receiving a son, Charles Scott, which made their former abode one room too small. Mrs. Sampson and the new arrival are coming along splendidly. Chuck says the latter is now five months old and looks as though he might develop into an engineer. — Orchids this month go to Leslie Bradley Cutler, VII, who since 1928 has risen to her present important position as member of the Massachusetts House of Representatives.

Double congratulations go to Lou O'Malley and Mrs. O'Malley: "For the first time in the history of Massachusetts a man and wife were admitted on the same day to the practice of law. . . . Mrs. O'Malley, formerly of Cincinnati, was admitted to the bar of Ohio nine years ago and to the Federal bar five years ago. She was formerly vice-president of the Women's Legal Association of the United States. O'Malley graduated from Boston College Law School in 1936. . . ." — GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

## 1933

Yours truly expects that this column will be swelled to overflowing by the information he receives by word of mouth from all of you who are coming to the World's Fair this summer. You must all come — it is really worth your while, and while you are here, don't forget at least to call me up. Len Gifford started the parade when he was down during May, and if my recommendation is not sufficient, ask Giffy; he thinks it is quite O.K. also. Gif is engaged in private tutoring in Marblehead, Boston, and vicinity and seems to be doing quite nicely. This surely is a far cry from the investment business, where he was previously. I guess this is one of the most unusual occupations any of us has gotten into.

Our only note from the society columns is the announcement of the marriage of George V. Sweetnam to Miss Olive M. Keene. Sweetnam is a member of Phi Delta Theta and the University Club of Boston. — That's all for now. Don't forget we want lots more information during the summer. — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn, N.Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-102, M.I.T., Cambridge, Mass.

## 1934

Not long ago we mentioned in this column that George Cunha was located with one of the navy flying squadrons at Squantum, Mass. Now we receive word that George has been assigned to Scouting Squadron 71 aboard the newly launched airplane carrier *Wasp*. This floating flying field is said to be the last word in defense ingenuity. More power to the Navy, George! — Johnny Newbegin, who was previously with the Oxford Paper Company, has changed jobs and is now working for E. D. Jones and Sons Company in Pittsfield, Mass. They manufacture paper-mill equipment — mostly beaters, Jordans, and screens — so the paper-mill



1934 Continued

experience that John has accumulated should stand him in good stead. His job is in the development department. Since Pittsfield is in the heart of the Berkshire skiing country, Johnny will have every opportunity to break a leg or dislocate a hip whenever he feels in the mood. He says that Tuffy Emery and Johnny Westfall have been up there at various times, cooking up some wild expeditions — which isn't at all unusual. However, Tuffy has had to postpone his plans, due to a skin graft on his leg which kept him in the hospital for several weeks. Westfall is now working as a welding engineer with the Kellogg Company in Jersey City, N.J.

We recently received a theater ticket for one bedside seat at St. Clara's Hospital in Lincoln, Ill. It announces that Ted and Silvia Rimbach present "It's a Boy," starring Richard Frederick Rimbach on May 16 at 7:17 A.M. Our heartiest congratulations, Ted!

In our society column this month we have a few choice bits for Winchell scouts. Edward M. Rickard, Jr., was married on May 13 to Miss Elizabeth Barton Jones, daughter of Mr. and Mrs. Samuel R. Jones of Cranford, N.J. We wish the bride and bridegroom the best of luck. — G. Barker Hulett was married, the first week in April, to Miss Elizabeth Prentice of Great Falls, Mont. For the past year George has been with Alloys and Products, Inc., in New York City. He is now to be connected with the Congress Mine Company at Congress, Ariz., as an expert in mine valuation. — A long summer lies ahead in which many things can happen — many things which will be interesting to the Class in general. So keep your pencils sharp and jot down copious notes so that you'll have plenty of material for that letter you are planning to write to your poor struggling Secretary. Happy scribbles! — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, 169-49 24th Avenue, Flushing, Long Island, N.Y.

## 1935

Lest some of you send your letters to an out-of-date address, let me call attention to the end of these notes. — As usual we'll start out with the batch of clippings from the newspapers: Orson Randell and Miss Elizabeth Bruce have announced their engagement. Orson is sales manager of the Gates Rubber Company in Syracuse, N.Y. Bob Grosjean and Miss Emlen Knight Davies of Havre de Grace, Md., were married on May 27. The last news about Bob's job was that he held the position of secretary to the president of the Belgian senate. Tony Lowell and Miss Priscilla Nolan of Waltham, Mass., were married April 18. Tony is a statistician for the Philadelphia Health Council. Some time ago the engagement of Ken Finlayson to Miss Lucy MacBride was announced. Ken, a former member of the swimming team, slipped into the waves of matrimony on April 29. Zay Curtis was the best man, and Ken Holdom was one of the ushers; both are loyal '35 men.

Dave Greenlie and Miss Marguerite Gillespie were married April 15. Dave is doing research work in biology. Incidentally, I ran across him last May when I was in Boston. He looked as though the experience of wedlock agreed well with him. Dave came pretty close to Tubby Rogers' now obsolete advice about marrying the boss's daughter. — Our last bit of news from the papers concerns that now famous classmate, Gene Nohl. Seems that Gene addressed the Oshkosh, Wis., Education Association. Gene showed movies with his talk, which depicted undersea exploration work. The article mentioned that Gene had explored the remains of an ancient civilization, the sunken Aztlan pyramids in Rock Lake. That must have been an interesting experience.

Early in May I stopped in to see Jack Orchard, who lives on Staten Island and works for Wood, Molloy and France, lawyers in New York. He was much elated over passing the New York bar exams and was celebrating. Jack reports that he sees Tom Keeling, Buck Crist, Don Morrison, and Bob Kennedy occasionally. — Wednesday evening, May 24, about 30 members of the Classes of '34 and '35 gathered at the Tech Club in New York City. Jack Austin '36 also crept in somehow. Those present from our Class were Carl Boytano, Bob Kennedy, Cris Rafferty, Duane Davis, Alex Frank, Jack Orchard, and myself. During and after the dinner the beer flowed freely and it loosened the tongues of the boys. Consequently — news: Carl Boytano is still living in Hastings upon Hudson, just above the Big City. He is with Anaconda Wire and Cable, working, at present, on a device for measuring the tension in the paper used to wrap cables. Seems as if the tension is quite an important factor in the uniformity of the product and that the measurement of the tension is quite a complicated problem. Some time ago Carl did the experimental work leading to the revision of the national electrical codes for the capacity of wire and cable for current carrying. — Bob Kennedy showed up shortly after we had finished dinner. He gave the unheard-of excuse of having worked late at the office. We all asked what her name might be but could get no answer. Bob is still with Union Carbide and Carbon in the publicity department, of all places. Seems that he likes his work very much; it consists of telling the world what a fine bunch of products the company has. He is living with Fred Judd '34 at 36 Commerce Street, New York City.

Cris Rafferty is living at 1217 Troy Avenue, Brooklyn. He is with the Pioneer Instrument division of Bendix, whose plant is in Bendix, N.J. Cris is engineer on pressure instruments in general and on diaphragms and rate-of-climb meters in particular. It turns out that his primary side line is that of painting the fair town of Woodstock, N.Y., a brilliant red every week end. Woodstock is Cris's home town, and I suspect that "the little girl back home" has something to do with the matter. However, Cris, like Bob and Carl, protests any intentions of entering the blissful state of matrimony. —

Duane Davis is manager of the transcription division of Musicraft Records, Inc., a small company specializing in chamber music and special recordings and recording equipment. His address is Room 405, 10 West 47th Street, New York City. Duane rounds out his technical work with the hobby of photography. I'll bet he has been practicing this hobby on his daughter, Diane. Duane was with Phelps-Dodge Corporation up until recently, for which company he was New England cable representative. Those of you in and about New York should not be surprised if Duane gives you a call early next fall when the two Classes start getting together again.

Alex Frank started out as a waiter on the American Export Line and saw a bit of the world. In October of that year he joined Klein and Saks as an industrial engineer. In May, 1936, he left for a job with the American Distilling Company as a chemical engineer in charge of process control in Peoria, Ill. From there he went to Federal Mills, Inc., in September, 1937, as a traveling salesman with a territory from Boston to Charlotte, N.C. Last November Alex went to Tastyest, Inc., as production manager at their Trenton, N.J., plant. This April he joined the Krasilovsky Industrial Contractors, Inc., which is his present connection. The company specializes on the dismantling, moving, and erection of industrial plants. Alex makes plant layouts as a part of the company's service. — Jack Orchard was the cause of wild cheering at one point during the evening. Each one present rose, stated his name and company, mentioned whether or not he was married, and, if so, gave the number of children. Jack was about the last to rise; up to the time that he did, the score on children was a total of two. Jack got up and announced "three." You can imagine the comments — Papa Dionne, and so on.

Bob Lindenmeyr is with American Radiator and Standard Sanitary Corporation, in the main office, working on estimating. Bill Cross is running American Radiator's exhibit at the Fair. Prior to joining American Radiator, Bob worked for Westinghouse X-Ray. — Leonard Wiener is married and lives in Hackensack, N.J. He is with propeller division of Curtiss-Wright Corporation and works on vibrations, and so on, in the analytical department. He and Don Gittens, Paul Germond, and Bud Pflantz used to chase around together. Bud has since gone to St. Louis, Mo., where he is thought to be working for a utility. — Ian McFadyen is an industrial engineer with General Electric. He spent six months in Rio de Janeiro and has just returned from three months in Panama and Guatemala. Ian is coöperating with the utilities, especially the Electric Bond and Share properties, on the greater use of lamps. — Ken Finlayson, Walt Marshall, and Ken Holdom are all working for M. W. Kellogg Company.

As you may recall, your Secretary was with the Gleason Works, manufacturers of machine tools in Rochester, N.Y. I left them at the end of April and joined Dyer

Engineers, Inc. Dyer is a Cleveland outfit of consulting management engineers. We do time study, production control, cost control and budgeting. It is darned interesting work and certainly can never become monotonous. Everyday new problems arise. At the moment I am assigned to the S. S. White Dental Manufacturing Company on Staten Island, N. Y. The Dyer system of production control has been in use here for 14 years, and we are now engaged in installing cost control and budgeting. Since my address will be subject to change at frequent intervals, I'll ask you fellows to write to me through the forwarding address given below. — ROBERT J. GRANBERG, *General Secretary*, Care of Walter C. Voss, 9 Old Town Road, Wellesley Farms, Mass. RICHARD LAWRENCE, *Assistant Secretary*, 111 Waban Hill Road North, Chestnut Hill, Mass.

## 1937

Mac, our genial President, known also as Dave, has been doing a swell job of scouting and tracking down the "wandering '37's." Among the comings and goings, he has been able to ferret out that: "Bob Thorson has been living in the Bayonne Y.M.C.A. since graduation, working for the Texas Company. He is building docks, tanks, and other odds and ends in Bayonne, Newburgh, N. Y., and other places. Norm Matthews transferred to United States Research Laboratories from Youngstown Sheet and Tube; doesn't enjoy research and expects to be back in production soon. Al Haskell, now living at 238 Argle Place, Arlington, N. J., is working for Crucible Steel Company. Harry Udin is with United States Metals Refining in Carteret." All the above he wrote on *one* (1) — count them — post card. Great stuff! He goes on in others: "Jim Pearson is working with Procter and Gamble at Port Ivory, Staten Island, probably to prevent runs from coming in his socks (humor, Mac?). Wayne Pierce has been transferred from the Hartford to the Bridgeport plant of Curtiss-Wright. Bill McCune is back in the metropolitan area in Montclair." (Where are you, Bill?)

From the *Panama American* of May 6 comes the following sad bit of news; I had hoped that things like this would not mar our news for years, but already they are coming: "Frederic Wasserman, of Ancon (Canal Zone), Student Engineer in the Health Department of the Panama Canal, died early Friday morning in Gorgas Hospital as a result of complications following an operation for appendicitis. He was 23 years old. He became suddenly ill while on a fishing trip last Sunday and entered the hospital Tuesday night." Ironically, Fred was in Course VII, Biology and Public Health. — Another last-minute item about which I have no details but which also strikes close to many of us: H. Elmer Hall of the Department of Mechanical Engineering died on May 11.

Rolf Schneider, 42 Donaldson Avenue, Rutherford, N. J., has sent a letter which makes me once again sit up and look around: "Arousing myself from the

spring fever that has held me in its grip recently, I come forth with the following offering for you to include in your next column of class notes. And don't let today's date (April 1) fool you. First of all, engagements and the like: Jack Mather announced his engagement over the Christmas holidays, and Dave Fulton did likewise during the first part of February. Both expect to take the final step sometime this summer. Bob Brauer writes that Bob Thorson planned to be married in June. Incidentally, Willard Marcy made his plunge into the well-known sea last October. Now for some news of Course X: Jim Warburton and Al Faatz are both employed by M. W. Kellogg Company in Jersey City, where they are busily engaged designing equipment for use in petroleum refining. Nestor Sabi now resides in Elizabeth and works for an asphalt company in Perth Amboy. Marcy is working for the American Sugar Refining Company in Brooklyn, and Jack Mather is employed in the research labs of General Printing Ink in New York. Dave Fulton and I are both in the New York office of the Lummus Company — Dave is designing equipment, and I am spending my time preparing patent applications.

Last summer I saw Joe Comley in Philadelphia, where he is working for the Crown Can Company, but none of the boys around here has heard anything from him recently. Ray Dreselly and Mont Abbott are practically out of contact with us, as they are employed by the Humble Oil Company far away in Baytown, Texas. From their occasional letters they seem to be enjoying their work. On February 2 I attended a beer party held by the M.I.T. Club of Northern New Jersey at the Feigenspan brewery in Newark. Also present for a guzzling good time were Jack Booton, Louis DuBois, and Sid Levine. On several recent trips back to Boston I have seen Francis Buffington and Dom Cestoni. From last reports, Buff is at present working. Dom is employed as a chemist by a meat-packing concern in Boston.

As for myself, I was leading a merry life until last February 14, when I discovered, much to my present grief, that an unknown ulcer in my stomach had finally decided to wear through. The emergency operation was successfully performed and I have now just about recovered. I am on a fairly strict diet, which eliminates about everything that is worth eating. After leaving school I was employed for several months by the Socony-Vacuum Oil Company in their development labs at Paulsboro, N. J. About the first of November, however, I changed my connections to the Lummus Company in New York, where I have an opportunity to use the bit of engineering knowledge I picked up at Tech, and at the same time a chance to study patent law. My present job consists in helping the company's patent attorney prepare patent applications for the numerous ideas that are constantly being suggested about the office. . . . — WINTHROP A. JOHNS, *General Secretary*, 245 Hale Street, New Brunswick, N. J.

## 1938

We had expected to hear of more June weddings than have been reported to us. The total is only two, and both the men involved are from Course X: Ab Byfield, who just finished a graduate year in chemical engineering practice, was married on May 31 to Miss Betty Smith of Brighton, Mass., a graduate of Boston University. According to present plans (the time of writing the notes is before the wedding day) the couple will spend a few months touring the country, mostly the West. Ab will report to work around the first of August. The other matrimonial-minded classmate is Jack Wilber, who was to marry Miss Muriel Forrest of Lynn on June 24. While we don't know the plans of the couple — other than that they will live near Philadelphia, where Jack is employed by the Crown Can Company — we do wish them, as well as the Byfields, much happiness. — We have just learned of another potential candidate for the Class of 1938 Scholarship: Waddy Hinds, X, has become a papa. Our source of information did not know whether a boy or girl, but we're sure he, or she, will make a fine chemical engineer!

Speaking of chemists, news comes that Jack Bethel, XI, has been connected with Metcalf and Eddy, sanitary engineers of Boston, since last December. He is at present resident engineer and chief chemist at the new Lawrence, Mass., filter plant, for the engineering firm until the plant is formally accepted by the city of Lawrence. He expected to be there until sometime in June or July, when he will move to the Rockford filter plant, now under construction. — Ted Lisberger, VI, has been working with the General Electric Company in the Philadelphia works. (These Philadelphia men should get together; there are a lot of them down that way). Ted is testing automatic station switchboards at the present time and expects soon to move to Schenectady. — Bob Eddy, XIII, has been transferred by United Fruit from New York to Newport News, Va. Quite a break, we would say, since the beaches around Virginia are considerably less crowded than New York's, while the attractions are just as numerous. And speaking of beaches reminds us of a story we heard not long ago about Frank Kearny, II. Our sincerest sympathies go out to Frank, who dislocated a knee while sailing. We've heard of such accidents during the skiing season but not sailing! The gulf must have been very rough that day.

It was a pleasure to hear that Matthijs Boissevain, II, Ascher Shapiro, II, and Frank Gardner, XIX, who are all doing graduate work at the Institute, were initiated into Sigma Xi on May 22. — We know that many will be interested in knowing that Jim Gilliss, XIII, is going on the Thorne-Loomis tour of Europe this summer. The tour this year is in the hands of Allen Horton '36.

Now that you have read through *The Review*, we hope that the reports of the Alumni Day and Senior Week activities have brought back some fond memories



## 1938 Continued

to you of those events just a year ago. If in the course of reading some of those articles, you did not somewhat wistfully recall your own graduation and Senior Week and days as an undergraduate, then stop reading here, because what we have to say will hold no interest for you. But the very fact that you do turn to this column to hear about your classmates, is good evidence, we believe, of your interest in the Class.

How about making that interest a little more objective and less passive? Your Secretaries suggest two ways in which you can do it: (1) Give us some news! Certainly you have heard from, or at least of, some '38 men. Drop Bergy a line on a post card at the address at the end of these notes. By this time we know where most of the fellows are working, and have tried to learn (and tell you) of all the engagements, marriages, and births occurring in the Class, so news items do not have to be of such import to be worth sending in. Tell us about that get-together with Jones the other day, or about running into Smith at the Fair (either fair!). Or let us hear about your trip during vacation. (2) We have rather casually mentioned the Class of 1938 gift before — with a discouraging lack of results. Discouraging, we say, because the response of the Class has usually been much better than in this case. What we are trying to do, you know, is to raise a fund, both through insurance assignments and cash contributions, which will accumulate through interest in 25 years to a sum large enough to provide a scholarship from interest payments, preference in the scholarship selection to be given to *your* offspring. What better way is there to show your interest in Technology than by helping someone to derive the same benefits and pleasures that you did there? And what more appropriate time to tend to this business than on the anniversary of your graduation? So far we have received contributions from only five per cent of the Class. — How about the rest of you? Let's have some checks for the Class of 1938 Scholarship Fund. — DALE F. MORGAN, *General Secretary*, 61 Park Drive, Boston, Mass. LLOYD BERGESON, *Assistant Secretary*, 885 Beacon Street, Newton Centre, Mass.

## 1939

Climaxing the most successful Senior Week in our limited experiences, graduation exercises and the senior ball afforded

'39 its last official functions as a Class for some time to come. We sincerely hope that the reunions may prove as enjoyable and that we will continue to have such an excellent turnout.

As is fitting, we turn first to the future activities of several members of the Class: Our worthy Prexy, Doc Wingard, will probably be spending the next few years amplifying his education — place undecided as yet. — Among our aeronauticals, we discover that Dick Cella will be with Consolidated in San Diego. Dick has already made plans to join the local boat club so that he may continue his favorite pastime. Hans Bebie has received one of the coveted positions from the Glenn L. Martin Company and will be working in Baltimore shortly after graduation. — Myle Holley has been fortunate in obtaining an assistantship in the Civil Engineering Department at the Institute, and our versatile Bob Plunkett, also of Course I, will have an assistantship in Course VI. — Chuck Ryder has made definite plans for attending the Harvard Medical School — we hope engineering won't be completely forsaken. — Eric Reeves, who came to us from Newfoundland, will be working for the Aluminum Company of Canada.

By way of romance, Fred Grant's engagement to Miss Virginia Stuart Bell of Altadena, Calif., was announced a short time ago. Miss Bell was graduated from Wellesley last month as was Miss Dorothy C. Voss of Pittsburgh, Pa., who is engaged to Bob Casselman, XV. To continue in Course XV: Ed Fish has recently become engaged to Miss Harriet Ulrich of Hartford, Conn. From the New York *Herald Tribune*, we discover the engagement of Harry Butler, II, and Miss Julia Gray of New York and Middletown Springs, Vt.

Several of our more fortunate members are at present disporting themselves in Norway on the annual Thorne-Loomis industrial tour made under the capable guidance of Al Horton, '36. Among this group might be found Don Waterman, II, Oz Stewart, II, Bill Brewster, II, Jim Laubach, XV, and Jim Gilliss, '38, XIII. We can rest assured that the reputation of '39 is being more than upheld!

Course Secretaries for our Class as finally appointed are as follows: I, Willard F. Babcock; II, Oswald Stewart; III, Will B. Jamison; IV, Thomas B. Akin, Jr.; V, Peter M. Bernays; VI-A, David S. Frankel; VI-C, Walter K. Halstead; VI,

Joseph G. Mazur; VII, Arthur S. Grossman; VIII, Richard S. Leghorn; IX, George D. Cremer; X, Nicholas E. Carr, Jr., and Winthrop B. Reed; XII, George W. Beer; XIII, Howard D. Marshall; XIV, Charles E. MacKinnon; XV<sub>1</sub>, James H. Laubach, Jr.; XV<sub>2</sub>, Frederick B. Grant; XVI, George L. Estes, Jr.; XVII, William R. Willard; XIX, Aaron M. White. The purpose of these Secretaries is to keep in touch with those in their respective Courses following graduation. It is hoped that all news items of great, minor, or even indifferent significance will be transmitted to them with all possible dispatch. Their addresses will be published in subsequent issues as they become definite.

From Course V we hear that Johnny Ohlson, Larry Woolaver, and Jim Schulman will all be returning to the Institute for further knowledge as teaching fellows. Pete Bernays plans to attend the University of Illinois for graduate work and as a proctor in the Illinois chapter of his fraternity, while Ed Rittner and Hewitt Fletcher will be back for the M.I.T. Graduate School. Dave Mullin will be working near by at the Carter's Ink Company. — Herm Hanson, XV, will be with the Burroughs Adding Machine Company, and Bus Emerson will work for International Business Machines. — In Course XIII we find Dave Hammell, a true man of the sea with his four years of crew in addition to the scholastic endeavors, about to start the Bethlehem Loop Course which will lead to shipwork. Accepted in the same course, we note, is Steve Sullivan. Bob Tapscott, having transferred from Annapolis, has a position at the Newport News shipyards, as has Howie Marshall. — Jack Hamilton, X, who so ably captained the track team, will be with the Aluminum Company of America. Frank Spooner, of the same Course, has accepted a position with Socony Vacuum, and Bob Wooster will be in the R. and H. Chemicals division of the Du Pont Company.

In closing we again express the request that any bits of news be forwarded to the Course Secretaries as quickly as possible in order that our column in The Review may never suffer from a dearth of material. — STUART PAIGE, *General Secretary*, Box 207, Greenwich, Conn. MORRIS E. NICHOLSON, *Assistant Secretary*, 2591 Colchester Road, Cleveland Heights, Ohio.

## NOTICE TO REVIEW READERS

The Review is not published during the months of August, September, and October. This is therefore the last issue of Volume 41, and readers who file their issues have a complete volume if they possess copies for the months beginning with November and ending with July. Volume 42 will begin with the November, 1939, issue, out on October 27.

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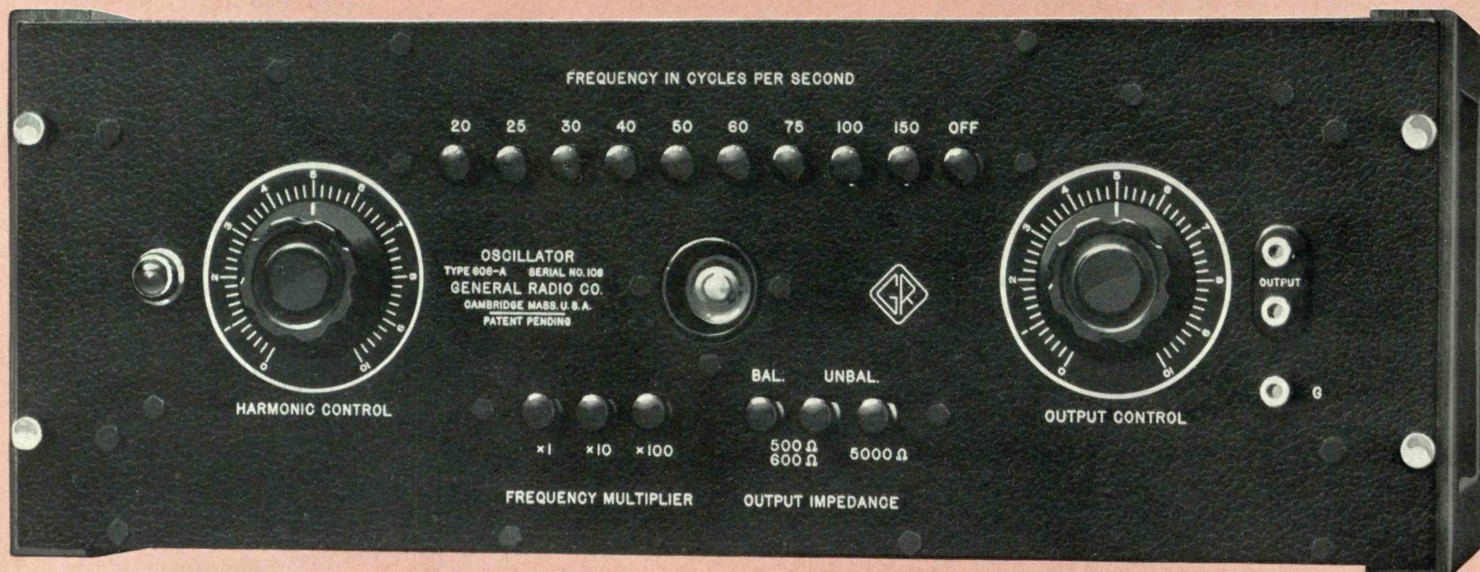
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